

A FRAMEWORK FOR LAND INFORMATION MANAGEMENT IN GHANA

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ABSTRACT

Land information management in Ghana, as in many developing countries, remains a practice monopolised by public sector land administration agencies, which are known for being inefficient in delivering services that satisfy the needs of citizens. Under this monopolised regime, landed property related data gathering, processing through land registration, storage and dissemination of the information as final product for public use is entirely based on expert knowledge. Meanwhile, reliance on this kind of knowledge for land information management has continuously failed to promote smooth flow and a broad based access to reliable information for decision making by citizens. This failure has created a huge land information gap between market participants' especially genuine and fraudulent landed property owners on one hand and potential buyers, lenders, and investors on the other hand. Thus, there is information asymmetry, which this study identifies as a major contributory factor to the challenges of uncertainties and high transaction costs that characterise dealings in urban real estate markets in Ghana.

In order to verify how the information gap can be closed, this research adopts quantitative research methodology. The research mainly explores multinomial logistic regression model to test Economic Theory of Knowledge propounded by Hayek (1945) using Ghana as the context of study. Primary data was collected from potential land information suppliers within the private sector and existing users of land information as likely beneficiaries of an efficient land information management regime. Interrater agreement index and Pearson's bivariate correlation analysis were used to analyse primary data gathered from users of land information in relation to land information needs and competition in land information harnessing. Following verification of the relationship between competition and economic knowledge, the key research finding is that there are two kinds of land information management knowledge and these are expert and entrepreneurial land information management knowledge. Thus, the research presents empirical evidence that out of four types of entrepreneurial knowledge verified, two types namely adaptive and cost-efficient knowledge are most likely to influence competition in land information supply. Also, competition is likely to deliver land information services that satisfy the needs of users of land information. Altogether, the research findings converge with the theory verified.

The research outcome suggests that deregulation of state monopoly of land information harnessing for competition among private economic actors in Ghana is due. Removing this barrier is likely to promote dynamic competition in which licensed land information suppliers can use adaptive and cost efficient knowledge in gathering and disseminating land information at competitive prices. The study also provides evidence that all-in-one land information, which is broadly accessible at competitive prices is likely to be required to help address the problem of information asymmetry in the context of Ghana. For purposes of practice in the context of urban real estate markets in Ghana, a framework based on the research findings is developed and validated. The framework is proposed to inform policy decision on deregulation for competition in land information harnessing to enable the real estate sector function well. To kick start the process, deregulation in land data gathering and dissemination of land information is suggested.

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DEDICATION

Dedicated to my wife Marjorie and children Stanislaus (Jnr.), Melissa and Shawn as well as all those who have been victims of the problem of information asymmetry in urban real estate markets in Ghana

GLOSSARY

AFRC	Armed Forces Revolutionary Council
CPP	Convention People's Party
DRS	Deeds Registration System
ERP	Economic Recovery Programme
ETK	Economic Theory of Knowledge
EU	European Union
FAO	Food and Agriculture Organisation
GAR	Greater Accra Region
GBA	Ghana Bar Association
GhIS	Ghana Institution of Surveyors
GREDA	Ghana Real Estate Developers Association
IMF	International Monetary Fund
LAP	Land Administration Project
LC	Lands Commission
LD	Lands Department
LIS	Land Information System
LRD	Land Registration Division
LRS	Land Registration System
LVD	Land Valuation Division
MDGs	Millennium Development Goals
MLF	Ministry of Lands and Forestry
MLFNR	Ministry of Lands, Forestry and Natural Resources
NDC	National Democratic Congress
NLIS	National Land Information System
NIRP	National Institutional Renewal Project
NLC	National Liberation Council
NPP	New Patriotic Party
NRC	National Redemption Council

OECD	Organisation for Economic Co-operation and Development
PNDC	Provisional National Defence Council
PNP	Peoples National Party
PP	Progress Party
PSLAAs	Public Sector Land Administration Agencies
PSLISs	Private Sector Land Information Suppliers
PVLMD	Public and Vested Land Management Division
REMs	Real Estate Markets
SAP	Structural Adjustment Programme
SD	Survey Department
SIC	State Insurance Company
SMD	Survey and Mapping Division
SSA	Sub-Saharan Africa
SSNIT	Social Security and National Insurance Trust
TRS	Title Registration System
UNCHS	United Nations Commission on Human Settlement
UNECE	United Nations Economic Commission on Europe
UREMs	Urban Real Estate Markets
WB	World Bank

Definitions and/or explanations of various terms used in the study.

Information asymmetry: It is the situation in which a seller of a subject matter of trade and/or the agent, who are believed to be well informed about the qualities of the item of trade, fails to disclose relevant material facts to other parties who have expressed interest in the trade for mutual beneficial exchanges. The failure could be as a result of non-disclosure, partial disclosure or misrepresentation. Regarding a landed property market, information asymmetry implies a landed property owner or the agent's failure to disclose material facts about the attributes of a landed property during a transaction due to non-disclosure, partial disclosure or misrepresentation to buyers or creditors.

Sub-Saharan Africa: The African continent consists of five main sub-regions namely North, West, East, Central, and Southern Africa. Excluding North Africa, the four remaining sub-regions constitute what is commonly known as Sub-Saharan Africa. By the World Bank designation, the sub-continent consists of forty-six countries.

Ghana: Ghana is a former British colony and English speaking country located in the West African sub-region of Sub-Saharan Africa and along the coast of the Atlantic Ocean. It is sandwiched between three French speaking countries namely Cote d'Ivoire, Burkina Faso and Togo. The currency used is cedi (Gh¢).

Family Lands: These are lands owned by families in some parts of Ghana. The ownership of family lands in the country is vested in families who are represented by family heads. As part of management practice, the family heads in consultation with principal members of the family can dispose of the land on behalf of the entire family. Interest in these lands can be granted in freehold, which is transfer to other persons in perpetuity or leasehold, which is transferring interest in the land for a specified period of years.

Stool Lands: Traditional authorities in Ghana, as chiefs, tribal leaders or land priests, generally sit in state on specially designed customary thrones, which are referred to as stools and skins in the southern and northern part of Ghana respectively. Correspondingly, in areas where by customary law, communal or tribal land ownership is vested in a chief, tribal leader or land priest, the land is referred to as stool land in southern Ghana or skin land when it is located in northern Ghana. Both the stool and skin symbolises authority when one compares them to a throne elsewhere.

Sporadic Registration: Sporadic land registration is a piecemeal approach adopted for gathering of landed property data, which is processed via land registration into

information that is stored for future dissemination to the public. It is piecemeal because the approach requires landed property owners to register their landed properties on voluntary basis. Registration is declared universal and not in a systematic manner from one declared area to another.

Systematic Registration: This is an approach to landed property data gathering through land registration in a sequential manner from one geographical area to another. This is achieved either by compulsory registration that involves providing incentives for landed property owners to register their properties or the state committing resources to capture landed property data into the land register. It could also be done by government laying down the conditions that trigger compulsory registration of landed property.

Landed property: Land refers to the liquid, gaseous and solid states of the earth, which includes minerals beneath the earth, space above the earth and the earth itself. Landed property, therefore, means bare land and/or buildings permanently attached to it. Landed property in this sense is real property, which is also commonly known as real estate.

Urban real estate market: An urban area in Ghana refers to a settlement with a population of 5,000 inhabitants or more. On the basis of this, urban real estate market refers to land, residential, commercial and agricultural land markets in any settlement with a population of more than 5,000 people.

Land administration is the process of land information harnessing, which includes landed property data gathering, processing of the data through registration, storage and dissemination of the information processed.

Land management involves land administration and land use planning. Thus, land management has a broader scope than land administration.

CHAPTER ONE

INTRODUCTION TO THE RESEARCH

1.0 BACKGROUND TO THE STUDY

All over the world, governments have intervened in landed property markets through the establishment of various forms of specialised public sector land administration agencies (PSLAAs), which perform a role common almost in every country. This role involves supporting landed property markets to function well for citizens to efficiently engage in mutual beneficial transactions in the market. Supporting the market takes the form of landed property related data gathering, processing through land registration, storage, and dissemination of relevant information as a final product to the public. This information management role, however, is not being adequately fulfilled in developing countries compared to what pertains in developed economies in at least three key areas.

First, in an era considered as information age, access to information is regarded as an issue of basic human right since the information is required for decision making to satisfy other basic human needs such as shelter (Hendrix and Rockcliffe, 1998); Britz (1999) and also, required for economic activities (Ball, 1998). Second and relevant to landed property markets, land information is regarded as a valuable resource (Dale and McLaughlin, 1999). Hence, its prudent management is contributing to PSLAAs depending less on national budgets (UNCHS, 1990; Hendrix and Rockcliffe, 1998; Dale and McLaughlin, 1999; Stanfield and Licht, 2009). Third, where PSLAAs are efficient and proactive in land information harnessing and there is a wide public access and effective use of the information, there is evidence that landed property markets are correspondingly functioning well (De Soto, 2000; Hammond, 2006b; Abdulai, 2007; Anim-Odame *et al.*, 2010). Aptly, this tripod scenario suggests that prudent land

information management supports urban real estate markets (UREMs) to function well for the benefit of individuals, society, and government.

Unlike the developed world, developing countries have a huge challenge with how to manage a responsive land information systems (LIS), which basically involves land information harnessing through, data gathering, processing, storage and dissemination. About 24 years ago, the UNCHS (1990) identifies and attributes the ineffectiveness of most LIS in developing countries to failure by governments to address adequately institutional and managerial challenges. As a result, attempts at setting up new LIS or modernising existing ones in many developing countries have always yielded limited results (Mulaku, 2000; Augustinus, 2003). Access to the LIS and for that matter to real estate markets is therefore, costly and constrained (Asiama, 1984; Farvaque and McAuslan, 1992; Hirtz, 1998; Fourie and Nino-Fluck, 2000; Augustinus, 2003; Shen and Sun, 2012). Following this, citizens' participation in the markets is confronted with several challenges as follows.

There is multiple sale of one landed property by a seller or by different sellers to two or more individuals (Olima, 1997; Gough and Yankson, 2000; Barry and Danso, 2014) and often landed properties disposed of in this manner are quite often associated with protracted litigation and violent clashes between individuals, families and communities making claims over ownership of the property (Kasanga and Kotey, 2001; Antwi, 2002; Sivam, 2002; Abdulai, 2007; Barry and Danso, 2014). Also, it is reported the protracted litigations are costly and draining time and resources away from developments in UREMs (Agbosu, 1990; Blocher, 2006). In addition, due to inadequate and unreliable market information from formal sources, there is market opportunism such as overpricing of land (Gough and Yankson, 2000; Kironde, 2000; Mooya and Cloete, 2007; Hammond, 2008; Toulmin, 2009; Hammond and Antwi, 2010). Thus,

opportunism as one of the fallouts of information asymmetry is rife in the UREMs in developing countries.

Indeed, focal literature acknowledges that there is significant information gaps and for that matter information asymmetry between land owners and buyers in UREMs, specifically in Ghana (Hammond, 2006b; Barry and Danso, 2014). Admittedly, the source of the problem of information asymmetry appears to be partially known as the following literature suggests, from a perspective of failure of LIS to gather sufficient land data through land registration. Again, the UNCHS (1990) about 24 years ago, for example, reports that it is estimated that 90% of land parcels in many developing countries have no evidence of formal registration of ownership. De Soto (2000) reiterates by reporting that about 85% real estate market transactions in developing countries occur out of the radar of the formal land registration system. Furthermore, McLaren (2011) reports that out of estimated 6 billion land parcels in the world, only about 25 per cent are formerly registered and greater part of these are associated with developed countries.

Against the preceding backdrop, the UNCHS (1991), Okpala (1992) and Augustinus (2003) attribute the challenge of insufficient land information supply to the fact that land information supply is mostly based on land records that do not have complete land registration coverage of respective SSA countries and urban areas. Indeed, apart from South Africa, which has about 80% registration coverage (Burns *et al.*, 2007), most of the countries in the sub-region are reported to have low registration coverage. With this relatively high registration coverage, the real estate market in South Africa is reported to be relatively distinct, transparent and more developed than real estate markets in many SSA countries (Karley, 2009; Anim-Odame *et al.*, 2010).

About nine years ago, the registration coverage in Ghana was reported to be around 8% (World Bank, 2005; Hammond, 2006b). The registration coverage in Madagascar according to Bruce and Knox (2009), is about one-fifteenth of the country (about 7%), 6% in Kenya (Miceli and Kieyah, 2003), 6% in Cameroon and 1% in Burundi (McAuslan, 2003), while Burkina Faso has 10% land registration coverage (World Bank, 2011). With the prevailing low registration coverage, Larsson (1991), Hanstad (1997), Palmer (1998), Feder and Nishio (1998), Torhonen (2004) and Williamson *et al.* (2010) have observed that land registries that have low registration coverage after long period of existence have peculiar problems with registration. Otherwise, Williamson *et al.* (2010) based on good land administration practices from international experiences suggest that it is possible to obtain full national land registration coverage between 15 to 20 years.

A developed country like Britain, which has a long history of land registration, is yet to attain full national registration coverage (Abdulai and Hammond, 2010). Nevertheless, international experiences with period of registration coverage raise an issue about land policies and performance of land registration agencies in developing countries. For example, land registration was introduced in the Gold Coast, now Ghana, in 1883 and Nigeria in 1885 (Agbosu, 1990; Abdulai, 2010). Land registration was also introduced in Kenya in 1908 and Uganda in 1922 (McAuslan, 2000), French Congo in 1899, French West Africa in 1906, French Equatorial Africa in 1920, and in Cameroon in 1932 (Njoh, 2004).

However, unlike in countries such as Sweden (Dale and McLaren, 1999), Netherlands (Zevenbergen, 2002) and Britain where the land registry is self-financed (Stanfield and Licht, 2009), this is not the situation in Ghana. This is because after a century of introduction of land registration, it is reported that the state funded land agencies are

failing to deliver on their registration mandate (Antwi, 2000; Antwi, 2002; Gambrah, 2002; Zevenbergen, 2002; Hammond, 2006b; Hammond, 2008). Arguably, this failure is not only peculiar to Ghana.

Governments in many SSA countries, for example, have over the past three decades relied on PSLAAs to implement various land registration programmes that have failed. These include attempts at introducing land registration and titling programmes aimed at promoting economic growth, sustainable development and poverty reduction (Okoth-Ogendo, 1993; Toulmin and Quan, 2000; Janvry *et al.*, 2001; Le Meur, 2005; Sikor and Müller, 2009). With the current approach of relying largely on PSLAAs and low rate of registration coverage, it is reported that SSA countries are likely to take another century to complete their land registers (UN-Habitat, 2012). Intuitively, this is likely to eventuate if monopoly of land administration service remains with PSLAAs.

Meanwhile, as pertains to economic theory debate where there are proponents for government intervention in markets (Pigou, 1920; Pigou, 1932; Bator, 1958; Wolf, 1979; Munger, 2008; Medema *et al.*, 2010; Gao, 2011; Besley, 2013; Colander, 2013) and also, opponents of state intervention including free market economists and public choice theorists (Coase, 1937; Hayek, 1945; Coase, 1960; Friedman, 1962; Buchanan and Tullock, 1965; Stigler, 1971; Friedman, 2009; Medema *et al.*, 2010; Gao, 2011; Colander, 2013), UREMs are equally confronted with similar debates. Regarding the ongoing debate, focal literature suggests that opponents to state interventions are blaming governments for unduly intervening in land markets on grounds that the customary land sector is the source of problems bedevilling UREMs in many SSA and developing countries (Barrows and Roth, 1989; Migot-Adholla *et al.*, 1991; Platteau, 1996; Feder and Nishio, 1998; Firmin-Sellers and Sellers, 1999; Antwi, 2000; Kasanga and Kotey, 2001; Antwi, 2002; Antwi and Adams, 2003; Abdulai, 2007; Arko-Adjei,

2011; Barry and Danso, 2014). This research contributes to the debate by verifying whether competition can be relied on to tackle information asymmetry in UREMs.

Arguably, theory based empirical evidence about competition in land information harnessing among private sector based land information suppliers in Ghana in particular, and developing countries in general, is scant in focal literature. This is notwithstanding that Holstein (1996) aptly notes that competition in land related services among decentralised agencies may be useful in reducing rent-seeking and monopoly power of public officials. Similarly, Antwi (2000) exploring rent-seeking theory recommends structural change in public land administration bureaus for either competition to be triggered among the bureaus for supply of same or similar public services or for supply of land information. Also, Antwi (2000) recommends increasing competition to the bureaucracy by greater use of private sources of supply of public services as an option. Hammond (2006a), however, opposes Antwi (2000) on grounds that the recommendation was based on perception in theory that the private sector can do better than the public sector.

Whilst both sides of the argument may be valid in their own right, there is no empirical research to back the proposal for competition against continued monopolisation of land administration services by PSLAAs. Fortunately, Antwi (2000) has studied the operations of land purchasers in the informal sector. Also, Abdulai (2007) after studying customary land suppliers, recommends for further research into activities of land sector agencies as agencies that implement land policy in order to complete the tripod. Thus, this research contributes to bridging this knowledge gap in UREMs using Ghana as the context of study in SSA but, by applying new theoretical lens to understand why PSLAAs are failing to deliver on their land information management mandate and how this failure can be tackled.

1.1 STATEMENT OF RESEARCH PROBLEM

Properly understood, land registration is a land information system tool employed in gathering landed property related data, which is processed, stored and disseminated upon request by interested persons for landed property related decision making. However, in Ghana and many developing countries, land registration has not been effectively propagated, focused and used as a means for harnessing land information to provide a milieu for real estate markets to function efficiently for the benefit of society. Contrarily, land registration has been overenthusiastically touted as a means of guaranteeing security of land rights (Simpson, 1976; Feder and Noronha, 1987; Abdulai, 2007). This direction of focus is against a long held caution by Simpson (1976, p. 3) that *land registration is only a means to an end. It is not an end in itself. Much time, money, and effort can be wasted if that elementary truth be forgotten*. Hence, the reason for failure of LIS could be summed up in the words of Seidman (1975, p. 643) that *means determine ends, just as ends determine means*.

Having come to the realisation that registration *per se* does not offer security of land rights, one key lesson that appears not to have been critically considered is that, the envisaged guarantee of security of land rights is contingent upon efficiency of real estate markets. The efficiency of the market is also largely dependent on the prevalence of information symmetry among market participants. Interestingly, government and its land administration agencies as implementers of the land registration policies, appear to have failed to recognise land information as renewable resource, which also serves as the lifeblood of the real estate market. Hence, governments' over reliance in the past and presently on public sector land administration bureaus alone to build a responsive land information system that can enable UREMs to function well has often been a failure in in Ghana, as in many other developing countries (UNECA, 1996; Augustinus, 2003).

Considering that state owned bureau have been relied on with insignificant results, lack of empirical work also appears to be a contributory factor to why a market based approach has not been well thought through as a possible means of building a responsive LIS. Thus, the predominant prescription and recommendations in focal literature is skewed towards integration of land administration bureaus into a single agency (Holstein, 1996; Barnes, 2003; Bandeira *et al.*, 2010). In practice, therefore, although competition as a market based alternative to monopoly by public sector land bureaus is envisaged as a possible viable option (Holstein, 1996; Antwi, 2000), this has not been considered for policy decision in many developing countries.

Following failure to introduce innovative approach such as competition, which Antwi (2000) suggested but was rebutted by Hammond (2006a), restructuring of four land administration agencies under the umbrella of a National Lands Commission (NLC) was recommended and implemented in 2008. This approach is envisaged to achieve efficiency and effectiveness in service delivery as captured under the preamble of the Lands Commission Act 2008 (Act 767). This restructuring arguably implies that in the long run, the formal real estate sector is likely to remain competing with the informal private real estate sector that already appears to be delivering parallel services of the formal sector to the public (De Soto, 2000; Kombe and Kreibich, 2000; Antwi, 2002). Thus, the current approach adopted is likely to worsen the fallouts of the real estate market failure, which the National Land Policy (NLP) launched in 1999 catalogues as indiscipline, protracted disputes, and multiple sale of land bedevilling the real estate sector (Ministry of Lands and Forestry, 1999).

1.2 RESEARCH QUESTIONS

The following key research queries are identified as issues that need to be highlighted and investigated from a critical review of focal literature.

1. What are the sources and causes of information asymmetry in real estate markets?
2. Why is the problem of information asymmetry persisting in urban real estate markets in Ghana?
3. What needs to be done to effectively tackle information asymmetry among parties involved in transactions in urban real estate markets in Ghana?
4. Why is competition a more reliable economic method to adopt for responsive supply of landed property information in urban real estate markets?
5. What is the relevant landed property information required to bring information symmetry among urban real estate markets dealers?
6. How practicable can competition in harnessing of land information be relied on as a method to tackle information asymmetry in the context of Ghana?

1.3 AIM AND OBJECTIVES OF THE RESEARCH

The aim of this research is to empirically assess whether competition among private economic actors in harnessing of land information is a better alternative method than monopoly for tackling the problem of information asymmetry in real estate markets. The specific objectives set to achieve this aim using urban real estate markets in Ghana as the context of study are to:

- (i) Develop an understanding of the nature, source and cause of information asymmetry in real estate markets by reviewing focal literature.
- (ii) Trace systematically the origin and nature of information asymmetry by review of literature on Ghana with the view to identifying reasons for persistence of information asymmetry in the real estate sector.
- (iii) Identify from theory the role of economic knowledge in society and why competition is better than monopoly in harnessing of land information.

- (iv) Assess by quantitative approach the relationship between economic knowledge and competition in land information harnessing in the context of real estate markets.
- (v) Determine empirically by verifying from stakeholders relevant information required for information symmetry to prevail and how this can happen.
- (vi) Validate research findings and seek comments on the feasibility of a framework developed from the findings to inform policy decisions on harnessing of land information in UREMs.

1.4 JUSTIFICATION FOR THE STUDY

The importance of this research aside the contribution it makes to knowledge cannot be overemphasised. This is because the findings of the research provide significant insights and proposals that can inform policy decisions to tackle information asymmetry in UREMs. The framework developed from this research, for instance, can serve as a bespoke LIS framework that can cope with the rapid urbanisation in Ghana and an expanding UREM, which is becoming more complex with a wide range of actors with different interests, needs, demands, and different and overlapping challenges with access to the market.

The research is also relevant in relation to Ghana's Land Administration Project, which began in 2003 as a long term programme and it is expected to span over a 25 year period in three phases. Phase I, which spanned between 2003 and 2010, cost the nation about \$50 million and yet UREMs continue to grapple with major outstanding issues the intervention targets to address. A monitoring and evaluation report of the LAP at the end of Phase I during which restructuring of four land sector agencies occurred shows that there are major outstanding issues not yet tackled. These include insecurity of land tenure, difficult access to land for various uses, poor records and land information

management, and delays in the adjudication of land disputes in court (MLNR, 2011). Notwithstanding these early signals, implementation of Phase II is currently on course at an estimated cost of \$72 million for a period between 2011 and 2016 (MLNR, 2011). Phase III, is most likely to continue after Phase II. In this regard, the research findings may offer insights into the actual problem that needs to be tackled and not the symptoms.

Thus, until the issue of information asymmetry attracts adequate policy attention, the funds are likely to be going waste on one hand whilst the country on the other hand, is facing several other challenges. These include rapid population growth and urbanisation, consistent budget constraints and deficits for which most social interventions for example under the Millennium Development Goals (MDGs) have not yet been fully achieved. In the light of these, it may appear prudent certain state agencies like the land administration agencies be deregulated and tasked to compete or perform monitoring role over private sector competition in the real estate sector as proposed in the framework developed from the research findings. In this way, funds that would have gone to waste or served as a drain on scarce state resources are likely to be channelled into interventions such as water, health, education, energy, transport and slums upgrading in the country.

1.5 SCOPE OF THE STUDY

The research focuses on the issue of whether deregulation of monopoly over land information management by PSLAAs is likely to lead to competition among potential private sector land information suppliers (PSLISs) to supply land information in a responsive manner for land information users in UREMs. If so, within what framework can this be successful? In order to investigate the issue, the research focuses on first,

identifying the framework within which a responsive supply of land information can be achieved and second, focuses largely on UREMs in Ghana.

First, the framework that is required for responsive supply of land information is for the purposes of tackling information asymmetry that leads to adverse selection and not information asymmetry about moral hazards as commonly studied under insurance policies (Lützkendorf and Speer, 2005). The land information system envisaged to tackle the problem is not necessarily a LIS that mainly focuses on computerisation but based on entrepreneurial knowledge of harnessing land information. Second and regarding UREMs, which is also referred to as landed property markets in this study (Ely, 1917; Abdulai and Hammond, 2010; Abdulai and Owusu-Ansah, 2014), the research specifically focuses on Accra, which is the city of study and national capital of Ghana. Hence, the research study area is Ghana, in West African region of SSA.

The African continent consists of five main sub-regional areas namely North, East, Central, West, and Southern Africa. Except for North Africa, the four remaining sub-regional areas constitute what is commonly known as SSA. Figures 1.1 and 1.2 respectively show the sub-regional areas and countries that constitute SSA.

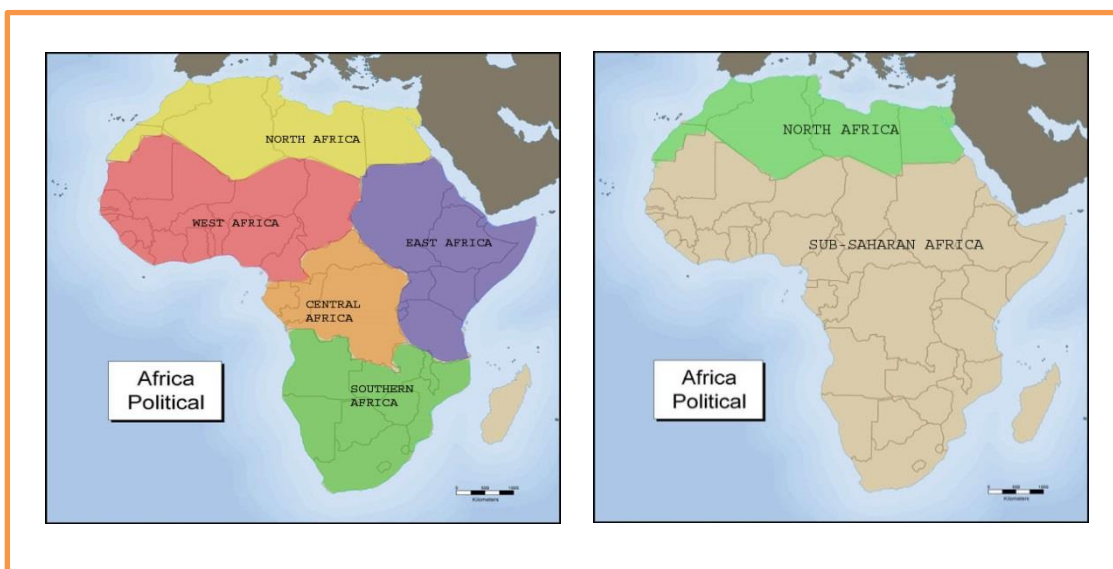


Figure 1. 1: An outline of political map and geographical context of SSA



Figure 1. 2 Political map and geographical context of Sub-Saharan African countries

Figure 1.2 shows there are 47 countries that constitute SSA. However, depending on the source, one will always count different number of countries on the sub-continent (Hammond, 2006a; Abdulai, 2007; Alden Wily, 2011). In this study, however, 46 countries are mentioned based on World Bank Africa Indicators for 2013 (World Bank, 2013). Based on gross national income (GNI) per capita levels, the World Bank (2013) places the 46 countries into four groups. First, countries with GNI per capita less or equal to US\$1005 falls within the “Lower Income” countries. Second, countries with GNI per capita between US\$1006 and US\$3975 are classified as “Lower Middle Income” countries. Countries with GNI per capita between US\$3976 and US\$12275 constitute the third, which are classified as “Upper Middle Income” countries. The fourth classification describes countries with GNI per capita above US\$12276 as “High Income” countries. Hence, the World Bank (2003) classification of SSA countries according to GNI per capita is presented in Table 1.1.

Table 1.1: Sub-Saharan African countries by gross national income level

Level of Income	Countries
Lower Income	Benin, Burkina Faso, Central Republican Africa, Chad, Comoros, Congo Democratic Republic, Eritrea, Ethiopia, Gambia, Guinea, Guinea Bissau, Liberia, Madagascar, Malawi, Mali, Mozambique, Niger, Rwanda, Sierra Leone, Somalia, Tanzania, Togo, Uganda and Zimbabwe.
Lower Middle Income	Burundi, Cameroon, Cape Verde, Congo Republic, Cote d'Ivoire, Ghana, Lesotho, Mauritania, Nigeria, Sao Tome and Principe, Senegal, Sudan, Swaziland and Zambia.
Upper Middle Income	Angola, Botswana, Gabon, Mauritius, Namibia, Seychelles and South Africa.
High Income	Equatorial Guinea

Source: World Bank (2013)

From Table 1.1, only Equatorial Guinea out of the 46 countries is a high income country. Seven are upper middle income, 14 are lower income and 24 are low income countries by World Bank global standards of Gross National Income per capita. This suggests that in terms of per capita income, only Equatorial Guinea compares to OECD countries, whereas the remaining 45 countries have an uphill task of developing to attain high income status. It is this task that many SSA countries are struggling to overcome in the midst of the challenges confronting the UREMs in the various countries.

Within the context of UREMs in SSA, Ghana is chosen because prevailing challenges regarding gaps in land information flow, prevalence of the problem of information asymmetry and its symptoms as well as irresponsiveness of PSLAAs, are typical of challenges in many SSA countries (Antwi, 2002; Karley, 2009). It is worth mentioning that real estate market in South Africa generally is relatively well developed compared to most other SSA countries (Burns *et al.*, 2007; Karley, 2009; Anim-Odame *et al.*, 2010). Thus, reasons for the choice of Ghana for the research include the following.

Ghana, as a SSA country, has always been in the lime light of global events. First, with one of the earliest mercantilist and imperialist colonial history starting from the 15th

and 18th centuries, respectively (Olsson, 2009), formal incorporation of Ghana into the capitalist world began in 1874 when the British colonial administration assumed full jurisdiction of the coastal areas of the country and declared it as a Gold Coast Colony (Bourret, 1952; Hymer, 1970; Howard, 1976; Abdulai, 2007; Olsson, 2009). With colonial influence, development economists and other economists suggest that chronic economic underdevelopment and stagnant economic growth of developing economies stem from weak institutions bequeathed by the colonial masters to the colonised countries (North, 1990; Hall and Jones, 1999; Firmin-Sellers, 2000; Olsson, 2009). Thus, with introduction of land registration in 1883, Ghana stands out as one of the countries in the sub-region with long practice of land registration records management and yet grappling with the same but aggravating challenges.

Second, the independence of Ghana in 1957 again attracted global attention because it was the first black African country south of the Sahara to attain political independence from a colonial master (Horton, 2001; Debrah, 2002; Aryeetey *et al.*, 2004; Tsikata, 2007; Olsson, 2009; Obeng-Odoom, 2010). This example blazed the trail for many SSA countries to follow from the 1960s (Olsson, 2009). Hence, anything good that comes from the country is likely to be emulated by other SSA countries.

Third, Ghana provides an appropriate setting for studying land related issues such as information asymmetry in UREMs. This is because in terms of customary land administration, about 80% of the land area falls under customary land ownership systems (Kasanga and Kotey, 2001; Yeboah and Shaw, 2013). In addition, Ghana's credentials as one of SSA countries that recognises and upholds customary land law, tenure, ownership and practices is acknowledge in focal literature as exceptionally strong in comparison to other SSA countries (Gough and Yankson, 2000; Mends and De Meijere, 2006).

The fourth reason is that as at 2003, Alden Wily (2003) reports there were not less than 20 African countries implementing various kinds of Land Administration Projects (LAP). Coincidentally, Ghana embarked on the implementation of a LAP, which started in 2003 (Forkuo and Asiedu, 2009; Anim-Odame *et al.*, 2010). It is under the LAP that the implementation of institutional reform in terms of merger into a single agency prescribed under various studies appears to have come to fruition since 2009 (MLNR, 2011). The merger is discussed under Chapters Three and Ten. Indeed, the current restructuring of PSLAAs provides a good case for studying whether this method is the most viable method to help address the problem of information asymmetry in UREMs.

The fifth reason can be attributed to rapid urbanisation trend in Ghana, which focal literature suggests typifies the trend in many SSA countries and, therefore, serves as an appropriate setting representative of many SSA countries (Antwi, 2000; Gough and Yankson, 2000; Hammond, 2006a; Abdulai, 2007). The World Bank (2013) indicates that the annual population growth rate of 2.4% as compared to that of SSA at 2.5%. Thus, the reasons mentioned provide basis for considering UREMs in Ghana as the context of the research and it is with anticipation that the research will attract policy attention apart from the contribution it makes to existing knowledge and literature.

Ghana as the context of study is located in the West African sub-region of the continent of Africa. It is nested between Cote d'Ivoire to the west, Togo to the east, Burkina Faso to the north, and part of the Atlantic Ocean referred to as the Gulf of Guinea to the south. The country covers a land area of 238,537 square kilometres (Amamoo, 2007; Ghana Statistical Service, 2012). Aptly reported by Amamoo (2007), the land area of Ghana is comparatively about the size of the United Kingdom or the state of Oregon in the United State of America.

However, unlike the UK and USA, which are higher income countries, Ghana has been a lower income country until 2010 when it recorded a transition to a lower middle income country. By the World Bank (2013) classification shown earlier in Table 1.1, it implies that the GNI per capita of Ghana lies between US\$1006 and US\$3975. Technically, Ghana's transition to a lower middle income country suggests there should be a corresponding improvement in the standard of living of citizens including goods and services supplied for consumption. Arguably, land information services and land information supplied in real estate markets is one of such services and products respectively.

Ghana has a population that has risen from the first post-independence census figure of 6,726,815 in 1960 to 24,658,823 according to the fifth post-independence census conducted in 2010 (Amamoo, 2007; Ghana Statistical Service, 2012). The current population is unevenly distributed across Ghana's ten political administrative regions. Table 1.2 displays these ten administrative regions and corresponding population sizes.

Table 1. 2: The ten administrative regions of Ghana and their population sizes

Administrative Region	Regional Capital	Regional Population	Percentage Urban (%)
Greater Accra Region	Accra	4,010,054	90.5
Central Region	Cape Coast	2,201,863	47.1
Western Region	Takoradi	2,376,021	42.4
Volta Region	Ho	2,118,252	33.7
Eastern Region	Koforidua	2,633,154	43.4
Ashanti Region	Kumasi	4,780,380	60.6
Brong Ahafo Region	Sunyani	2,310,983	44.5
Northern Region	Tamale	2,479,461	30.3
Upper East Region	Bolgatanga	1,046,545	21.0
Upper West Region	Wa	702,110	16.3

Source: Ghana Statistical Service (2010)

Table 1.2 also shows that in terms of percentage of the population that reside in urban areas, GAR is the most urbanised region in the country with 90.5% of the population residing in urban areas. In Ghana, an urban area is defined as a settlement with 5,000 or more people. Thus, GAR is considered as the region of study since the focus of the study is UREMs.

Figure 1.3 shows the political boundaries of Ghana and the ten administrative regions. Greater Accra Region, which is the smallest administrative region in terms of land area as is also shown in Figure 1.3 depicts.



Figure 1.3: The political map of Ghana showing Accra as the study area

Furthermore, Figure 1.3 shows Accra, which is the regional and national capital of GAR and Ghana respectively. Considering Accra as the study city, Grant and Yankson (2003) and Gough and Yankson (2011) recall that Accra started as a small fishing village in the 16th century and it has grown to become the economic and political centre of Ghana. In 1877, the British colonial administration made it the capital and seat of the colonial administration of then Gold Coast, now Ghana. After independence from the colonial administration in 1957, successive governments have promoted Accra as the national

economic growth pole of Ghana, has contributed to the demographic and spatial growth of the city (Gough and Yankson, 2011). However, as the national capital, Accra is not only serving as the seat of government and headquarters of almost all state organisations including PSLAAs and most national organisations but, also it has certain features and challenges which is more pronounced than the other cities in the country face. Thus, the following are key reasons for selecting Accra as the city of study on UREMs in Ghana.

Admittedly, Accra is one of the fastest-growing city and urban area, which to some degree is common to cities in many SSA countries and other developing countries (Grant and Yankson, 2003; Gough and Yankson, 2011; Barry and Danso, 2014). With the rapid urbanisation, it is also the city and urban area with active landed property market, which is complex and characterised with challenging landed property transaction problems (Kasanga and Kotey, 2001). With rapid urbanisation, commodification and commercialisation of land, the challenges include customary land disputes, multiple sales of land, uncertainty in land transactions and insecurity in land titles (Kasanga and Kotey, 2001; Barry and Danso, 2014).

Also, the city is characterised by settlements which are described as informal because on one hand land, acquisitions and subsequent physical developments on the land are done outside the statutory regulatory structures (Antwi, 2002). On the other hand, the city is characterised by slum developments, which have been on the increase. Furthermore, the selection of Accra is informed by the rapid conversion of prime agricultural lands at peri-urban areas into plots for developments and the significance presence of information asymmetry in landed property transactions (Barry and Danso, 2014)

1.6 RESEARCH METHODOLOGY

The study adopts a quantitative research methodology in line with the aim and objectives of the research. The methodology adopted has an underlying assumption that truth about utilisation of economic knowledge possessed by potential PSLISs for competition in land information harnessing can emerge from responses that can be collected, measured, and analysed as variables that exist independently of the researcher and researcher's undue influence (Denscombe, 2010). Furthermore, in line with testing ETK composed of propositions such as competition as dependent variable and knowledge as independent variable, multinomial logistic regression model was used to numerically measure and analyse responses to reflect the responses gathered (Abdulai, 2010). The statistical package used is SPSS Version 20. In addition, Microsoft Excel version 20 was also used for data gathered as briefly outlined below.

Likert scale type response close-ended questionnaires were used as the survey instruments to collect data from 477 respondents on both information consumers side and potential suppliers of land information as well as land and property owners. This total is made up of responses from 261 land information consumers (LIUs) and 102 potential PSLISs. Landed property owners (LPOs) constituted 114 of the respondents. The questionnaires were administered face-to-face. The data was screened with Microsoft Excel spread sheet and analysed with an R software as well as SPSS Version 20. Secondary data collected was discussed in the form of graphs.

1.7 RESEARCH FINDINGS

1.7.1 Source and Cause of Information Asymmetry in UREMs in Ghana

The study traces the source of information asymmetry in UREMs in Ghana to low registration coverage in land registries in Ghana. The cause is possibly due the fact that land registration system has not been managed well enough as land information

gathering tool. Hence, the problem of information asymmetry has persisted since land registration was introduced in 1883. The study finds that attempts to tackle the problem has persisted because managers of the land registration system have focused on using the system to tackling the symptoms of information asymmetry, which are uncertainty and high litigation cost in UREMs in Ghana.

1.7.2 Information Required to Tackle Information Asymmetry in UREMs

The study finds that UREMs participants require all-in-one land information, which consists of information on market events, land ownership, use, environment, and public amenities in relation to landed properties. However, among this information set, market event information consisting of information on available properties and legal interests in the property and also, information on land tenure including confirmation of proprietary owner, litigation status, government interest and principal witnesses to a customary grant are the most required. Thus, existing information consumers want to know market conditions and to access the market at least cost and also with certainty in order to transact in UREMs. Furthermore, the study finds that tackling information asymmetry may require access to all-in-one land information at the least competitive cost to users of the information.

1.7.3 Approach to Tackle Information Asymmetry in UREMs

The real estate sector in Ghana has potential PSLISs with adaptive and cost efficient economic knowledge capable of being used in all-in-one land information gathering and dissemination. The approach required, therefore, to effectively tackle information asymmetry in Ghana is to introduce competition into land information harnessing in Ghana. Nonetheless, a specialised but more business oriented Land Information Management Division within the public sector land administration bureau in Ghana is required.

1.7.4 Relevance of ETK to UREMs in Ghana

The findings of the study suggests that deregulation of the monopoly of PSLAAs over land information harnessing is required in a systematic manner to enable PSLISs utilise their economic knowledge for competition in harnessing of land information. Thus, the findings of the research converge with ETK propounded by Hayek (1945).

1.8 RECOMMENDATIONS FOR POLICY

The study recommends for an alternative bespoke arrangement for government land sector agencies' presence in the market. In tandem with this and based on conclusions drawn from the findings of the study, the following recommendations are proposed for further policy considerations and studies.

1.8.1 The Main Policy Proposition

The entrenched monopoly power of the PSLAA responsible for land administration should be deregulated for competition in supply of land administration services by the private sector. Taking this step is most likely to ensure that existing huge information gap in the real sector will be systematically closed to enable healthy flow and wide access to reliable land information by the public. To achieve this, the NLP needs to be reconsidered to take into account contemporary issues on land information policy, management and administration. Thus, a Land Information Policy needs to be formulated for the country. Also, as a short term measure, the LC Act 2008 (Act 767), which provides for the establishment of any other Division as and when required, needs to be exploited to establish a Land Information Division (LID) to be in charge of harmonising land information data in the custody of existing PSLAAs.

1.8.2 Regulation and Monitoring of Private Sector Suppliers

A proposal for government regulation of the conduct and operations of private sector firms in land information supply is essential in as far as it is within the rule of law, norm

and acceptable practices. In this regard, mechanisms to ensure standards, land information privacy and security as well as curtailing acts of collusions to revert to monopoly structure among land information suppliers needs be checked and monitored.

1.8.3 Policy of No Land Information Pricing Legislation

One critical area that is likely to undermine the competitive process is government attempting to fix market prices of land information for private sector information suppliers. Since such an act may be a disincentive to the competitive process, the pricing of land information as much as practicable must be left to the urban real estate market forces of demand and supply. As established in Chapter Eight, the downward sloping demand curve for land information provides an indication that what the market requires is access to land information at a lower cost. Coincidentally, Chapter Ten also established that potential suppliers possess adaptive and efficiency knowledge, which are required to help deliver what the market requires at a lower cost. Thus, it is most likely that the forces of demand and supply can determine prices for the information that will enable wide access and use to the information to be supplied.

1.8.4 Policy on Standards and Privacy Issues

It is recommended that standards to an improved land information supply regime should set for delivering land information service beyond just information on land ownership but broadly on market comparables, land tenure, land use, environmental data, and public amenities information. Key policy issues on land information management such as who gathers and accesses the information and for what purpose are among the issues that must be addressed. Hence, it is recommended that any future licencing of PSLIS should as much as possible be depoliticised in order to ensure healthy competition and successful private sector participation in the land administration.

1.8.5 Policy on Incorporating Crime and Litigation into LIS

The study recommends for consideration, and integration of landed property crime related cases and data such as at the Property Fraud Unit of Police CID Headquarters and pending land disputes at the Specialised Land Court into future LIS. In this way, the uncertainty in landed property transactions is likely to be reduced. Thus, it is envisaged that this is likely to signal real estate market participants about areas and prospective landed property owners that needs to be avoided in order to curb the incidence of uncertainty and high litigation costs in the UREMs.

1.8.6 Recommendations for further studies

In view of the gaps identified during the review of relevant literature and from the findings as well as policy recommendations of the study, it is recommended that a cost-benefit analysis for deregulation of the monopoly power of the PSLAAs public sector land agencies for competition by PSLISs in land information harnessing in UREMs be carried. In this regard, a comparison can be made with respect to state-owned land agencies being regulators and policy implementing arm of government rather than being monopolist suppliers of land administration services.

Also, a cost-benefit analysis study for setting up a Land Information Division of the LC with financial autonomy is also recommended as an immediate stop gap measure to reduce the incidence of information asymmetry. This could serve as a pilot study towards a complete deregulation of monopoly power over land administration wielded by the public sector land agencies. Finally, a study into good governance and trust building for private sector participation in land information harnessing in UREMs in Ghana is recommended.

1.9 LIMITATIONS OF THE STUDY

The study is constrained by some major limitations. These include reliance on the self-report nature of PSLISs' responses on the degree to which they possess relevant knowledge required in competition. This could mean that failure on the part of respondents to offer candid responses may undermine the results. Also, sampling was done by relying on real estate related practitioners membership lists and this implies that some potential private sector entrepreneurs who do not belong to this fraternity from which the respondents were selected were excluded from the study. Furthermore, cost in terms of finance to support the data collection process was a huge constraint on the study. Nevertheless, the researcher and the field assistants did their best to collect as much data within the limited resources and time constraints to ensure the robustness of the study and results obtained.

1.10 ORGANISATION OF THE THESIS

The thesis consists of eleven chapters. First, a summary is presented and second, an outline of the chapters as shown in Figure 1.4.

Chapter 1 lays the main foundation for the study by providing an elaborate background, statement of the core research problems, key research questions raised, aim and objectives, scope, research methodology adopted and a summary of the research findings. The chapter also contains a summary of recommendations made based on the study, limitations of the study and a list of SSA countries. The chapter ends with an outline of the thesis of which a summary of the remaining ten chapters are provided as follows.

Chapter 2 reviews focal literature towards a LIS policy for future responsive management of land information. The chapter places the study in what appears to be a 21st century LIS policy perspective within a broader context of land policy, which

narrows down to land information policy. The chapter indicates the relevance of land information policy as a component of a land policy, which gives the overall policy direction of land management and administration towards the achievement of national development goals. The review identifies the way forward regarding cost-effective land information harnessing and service delivery that can enable broad based access and use by the general public to overcome the problem of information asymmetry in UREMs.

Focusing on Ghana, **Chapter 3** traces the origin of information asymmetry in UREMs in order to identify the relevant key reasons for persistence of the problem. The chapter also shows how PSLAAs evolved as a single organisation, subjected to frequent disintegration over the years and recently reintegrated with the aim of promoting efficient and effective service delivery. These have never yielded the desired results and information asymmetry has not been effectively addressed in UREMs since the problem emerged in the 1880s.

Against the preceding backdrop, **Chapter 4** discusses “Economic Theory of Knowledge” (ETK) developed by Hayek (1945). The theory forms the overarching theoretical perspective underpinning the study. ETK impliedly proposes that utilisation of practical knowledge in competition can enable cost-effective supply of land information, wide public access and use of the information. The chapter ends with a theoretical framework developed for testing the theory that utilisation of practical knowledge is likely to enable competition deliver responsive land information service than monopoly.

Chapter 5 builds on the theoretical framework by further developing a robust conceptual framework that narrows the focus of the study towards verification of ETK based on relevant variables derived. In this chapter, competition is conceptualised and operationalised as the dependent variable and four kinds of knowledge as independent

variables. The framework also explains the gains of having healthy flow of improved land information at a competitive price to users, suppliers, and society in general.

On the basis of the research aim, theoretical and conceptual frameworks developed, **Chapter 6** discusses the research methodology relied on to achieve the research goal. The chapter outlines the research paradigm, method, strategy and data collection techniques adopted and analysis used for measuring and assessing the relationship between competition and economic knowledge. Also, the relationship between improved land information service delivery under competition and users of land information expression of willingness to pay for such service. First, the chapter explores simple linear regression model using bivariate correlation (with Pearson product-moment correlation coefficient) to verify the relationship between demand and price of improved land information. Second, a multinomial logistic regression model with competition as the dependent variable and knowledge as the independent variable is formulated and explored in testing the relationship between these variables.

Chapters 7, 8, 9 focused on presenting data, analyses and discussions of research results whilst Chapter 10 validates the research findings obtained from these three preceding chapters. **Chapter 7** provides a descriptive statistics of research respondents, which includes land information users, land and property owners and potential land information suppliers. The chapter also reports on analysis of results of rating responses of land and property owners (LPOs). Secondary data obtained from the Police CID Headquarters and Specialised Land Courts were used to provide supporting basis for succeeding discussions.

Chapter 8 presents results obtained from analysis of demand side responses to the theoretical framework developed. This focuses on land information users (LIUs) responses and discussions of results, which lead to establishment of indices on specific

attributes of land information needed in urban real estate market. The chapter also provides empirical evidence on downward sloping demand curve for land information and reports that an improved land information supply is likely to enable more access to the information. How this inverse relationship was established is already explained in summary of Chapter 6 stated earlier.

Chapter 9 reports on results of analysis of potential private sector land information suppliers' (PSLIS) responses and outcome of verification of Economic Theory of Knowledge. The chapter reveals the likely relationship between competition and adaptive knowledge and efficiency knowledge in responsive land information supply.

Chapter 10 presents a summary of the main research findings followed by validation of the research findings reported in Chapters 7, 8, and 9. The validation process involved bureaucrats and professionals from the real estate, legal, and the financial sectors. The chapter also presents a framework for harnessing land information developed which was developed based on the research findings and following comments received from the respondents mentioned above, a final framework is firmed up for future policy consideration.

Chapter 11 provides the main conclusions drawn from the research and recommendations made based on the research outcome. The chapter also indicates the limitations of the study and make recommendations for future studies.

Table 1.3 shows the link between the research objectives, questions and corresponding chapters in which objectives are addressed.

Table 1.3: Linkages between research questions, objectives and chapters

No.	Research Question Raised	Research Objective Addressed	Thesis Chapter
1	What is the nature, source, and cause of information asymmetry in the real estate sector	Develop an understanding of nature, source and cause of information asymmetry in the real estate sector.	Chapter 2
2	Why is information asymmetry persisting in UREMs in Ghana	Trace the origin and identify why the problem is persisting by examining relevant literature on Ghana	Chapter 3
3	What needs to be done to tackle information asymmetry in urban real estate markets	Identify from theory the role of knowledge that makes competition better than monopoly	Chapters 4 and 5
4	What is the most reliable method for harnessing land information to bring information symmetry	Undertake a quantitative assessment of relationship between competition and economic knowledge	Chapter 6
5	What kind of information is required to bring information symmetry and opinion on method.	Determine relevant land information and how it is required for information symmetry to prevail	Chapter 7, 8 and 9
6	How practicable is competition in UREMs	Validate research findings and seek comments on the feasibility of a framework developed for harnessing of land information based on the research findings	Chapters 10

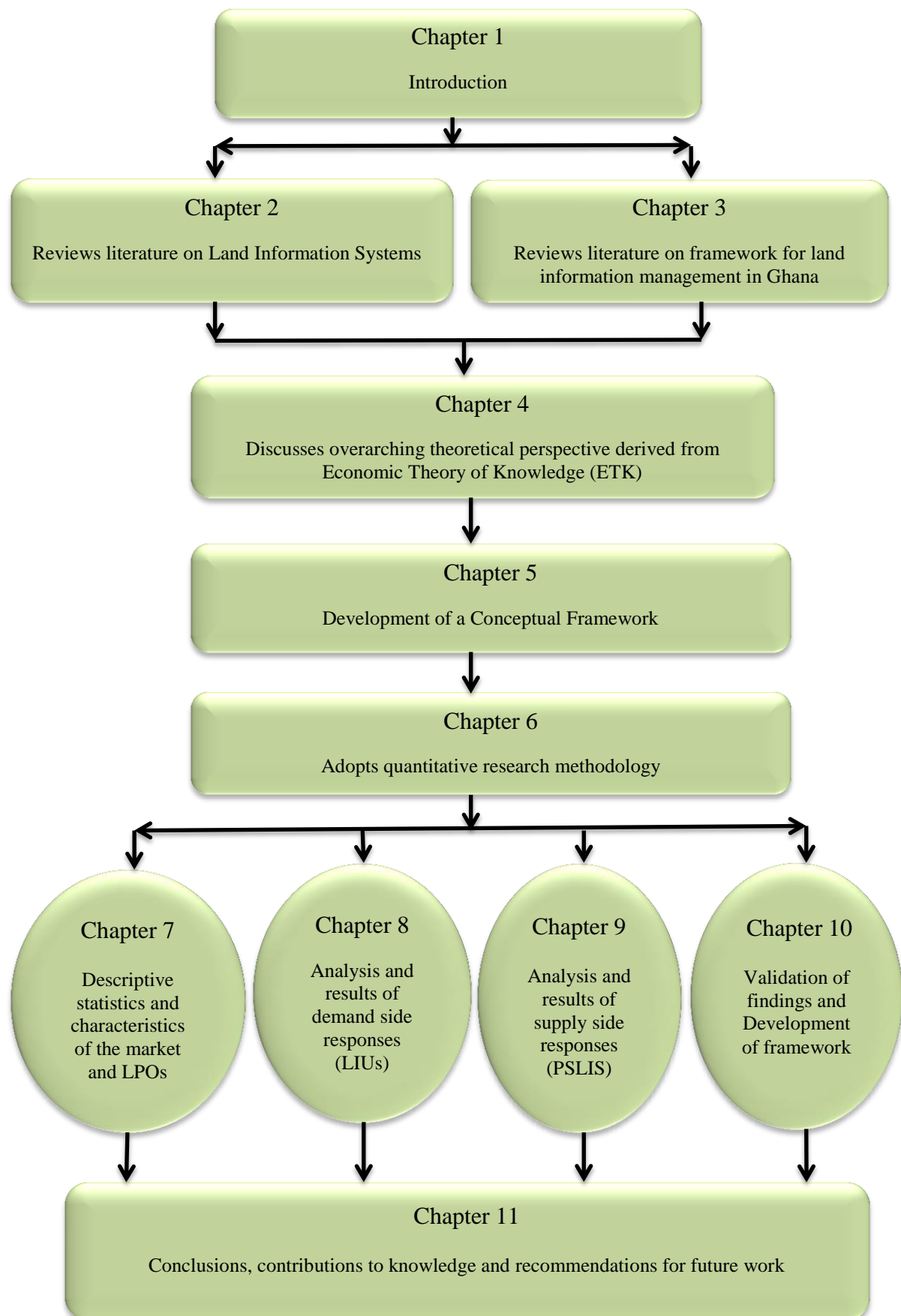


Figure 1.4: Organisation of the thesis

CHAPTER TWO

TOWARDS A LAND INFORMATION SYSTEMS POLICY

2.0 INTRODUCTION

This chapter address the second objective of the study, which is to develop an understanding of the nature, source, and cause of information asymmetry in the real estate sector. The chapter, therefore, has a prime task of examining focal literature to ascertain what practices promote healthy flow and use of land information and further drives UREMs to function well. To achieve this goal, the chapter explores the concept of LIS and broadly discusses conventional LIS models that underpin efficient real estate markets. The chapter also explores contemporary LIS policy options in focal literature towards future LIS policy considerations in Ghana. Furthermore, the chapter provides an overview of land registration systems, contextualises the concept of real estate market, introduces and elucidates on the concept of information asymmetry. The chapter ends with a summary of the review, which fulfils the objective set.

2.1 CONCEPT OF LAND INFORMATION SYSTEM IN UREMS

First of all, it is necessary to contextualised LIS in this thesis in order to avoid confusion over other information systems. This is necessary because LIS considered in the study is different from Geographic Information Systems (GIS) as, for example, studied under land administration in Ghana by Karikari (2003). It is also different from other information systems such as Utility Information System, Socio-Economic Information System, and Resource/Environmental Information System (Larsson, 1991). Thus, LIS under consideration focuses on a system that facilitates management of land records through harnessing of land information as an economic resource, which is widely accessible to the public for landed property related decision making.

Indeed, Nichols (1993, p. 5) aptly notes that LIS *does not necessarily imply the use of computers nor does a computer alone comprise a LIS*. Also, cognisance of the fact that in practice land data may be stored in a manual or digital form, Dale and McLaughlin (1989) acknowledge that the trend of computerisation of land related records is for ease of storage and retrieval (UNCHS, 1990; World Bank, 2011). Dale and McLaughlin (1989), however, posit that irrespective of the mode of storage, usefulness of the system depends on how often it is updated, its accuracy, completeness, accessibility, comprehensiveness, understandable and the extent to which the system has been designed for the benefit of users rather than for the producer of the information. Hence, LIS under succeeding discussions focuses on a client or user oriented system.

In terms of technical definition, Bedard (1986, p. 449) defines LIS as consisting of *procedures for the systematic collecting, storing, retrieving, updating, controlling, processing and distributing of land-related data*. A definition by Dale and McLaughlin (1989) summarizes that land information systems operation include the acquisition and assembly of data; their processing, storage and maintenance; and their retrieval, analysis and dissemination. A more popular and technical definition of LIS adopted by the International Federation of Surveyors (United Nations, 1983 cited in Larsson, 1991, p. 2) is that:

A Land Information System is a tool for legal, administrative and economic decision-making and an aid for planning and development which consists on the one hand of a database containing spatially referenced land-related data for a defined area, and on the other hand, of procedures and techniques for systematic collection, updating, processing and distribution of the data.

The UNECE (2005) has re-echoed this definition. A noticeable feature about all the definitions is that LIS involves land data gathering, processing into information, storage, retrieval and dissemination. Undoubtedly, Bedard (1986) admits land information systems are complex communication processes between collectors of the data and users of the final information. The process is complex because it involves decoding and interpretation of data, in this case land ownership, value, and land use data of which the output is information for users who are external to the LIS. In this regard, Bedard (1986, p. 452) opines that a LIS achieves *its goal if it helps to build, verify or improve the users' knowledge of the real world without the need for him to directly observe everything*. Impliedly, LIS that needs to be envisaged is the type that enables communication to its users who are real estate market dealers or potential participants, to become informed about demand and supply conditions in UREMs so that this may lead to prudent decision-making and choices in relation to landed properties.

2.2 CONTEMPORARY PRACTICES IN LIS

First and foremost, a brief background of LIS may help put the concept further in perspective. This is because the trajectory of LIS started with rudimentary practices of land records keeping for taxation and steadily progressed into a complex LIS in this modern time. Focal literature, for example, suggests that early evidence of official land records keeping based on survey of lands dates as far back as 3000 BC in the Royal Registry of ancient Egyptian Pharaohs for purposes of taxation and other services to the state (Dale and McLaughlin, 1988; Larsson, 1991; Carlson, 2005).

The above practice also existed and spread from Babylon, Persia, Greece, Rome, China, South India and Europe (Larsson, 1991; Bartlett, 1994; Burg, 2004; Carlson, 2005). Others include early Western European countries such as French, British, Germans, Dutch, and Danish (Larsson, 1991; Bartlett, 1994; Abdulai and Hammond, 2010).

Arguably, from the above literature, the experiences of most of the ancient states particularly Egypt, Greece, Rome and early European countries, especially, the British Domesday Book under King William the Conqueror, French Cadastre under Napoleon I, and the Germans Registration System serve as sources of conventional wisdom and lessons for LIS development.

Thus, since the 20th up to this 21st century, LIS has been an effective land administration tool for harnessing information about attributes and features related to landed properties in real estate markets for public use (see Section 2.9). For example, land information management experts such as Dale and McLaughlin (1988) note whatever changes that has occurred in LIS relates to changes in degree and not in principle as what is new is the quantity of data handled, the speed at which data can be processed, and ways in which data can be manipulated, analysed and disseminated as land information. Dale and McLaughlin (1998, pp. 78-79) suggest further that within any LIS, the information held must have the following characteristics desirable in information in order to meet the requirements of users. These characteristics are that the information must be:

- a. comprehensive in terms of spatial cover and content;
- b. accurate with little or no error;
- b. precise in terms of standard required for measurements;
- c. current to meet the needs of users and clear from ambiguity;
- d. appropriate to relate to potential user's requirements;
- e. quantifiable in terms of providing numerical information;
- f. verifiable so that users get the same answer to the same question;
- g. accessible in terms of extracting information quickly and easily; and

- h. free from bias in which case there is no modification or alteration to influence the receivers.

From the unfolding literature, the study summarises these attributes into three themes that can be used as litmus tests for assessing the responsiveness of LIS to UREMs. These include first, foundation of the LIS, second, quality of information in terms of content, and thirdly, quality of public access to the information. These are discussed as follows.

2.2.1 Foundation of a Responsive LIS

Conventional wisdom provides key lessons to show that a major step towards having an efficient and effective LIS is the capture of a substantial land area of the jurisdiction the system is operating. The Land Registry records of ancient Egypt, the French Cadastre under Napoleon I, the Domesday Book of England under William the Conqueror, and many land records building practices by European countries provide a pristine example (Larsson, 1991; Hammond, 2008). Indeed, many developed economies have shown commitment towards land information as a valuable resource by taking inventory of ownership of land followed by its maintenance and management using efficient and effective LIS (UNCHS, 1990; Nichols, 1993; Dale, 1997; UNECE, 2005; Hammond, 2006b; Abdulai *et al.*, 2007; Stanfield and Licht, 2009; Abdulai and Hammond, 2010; Williamson *et al.*, 2010). The LIS in most of the countries that have comprehensive land registration coverage are undeniably supportive of UREMs in the respective countries.

Wallace (2010) indicates that among 200 jurisdictions of the world responsible for national land administration, about 30-35 countries most of which are OECD countries, achieve national good governance standards in terms of meeting international best practice. Williamson *et al.* (2010) also mention that out of 227 nations of the world, about 40 nations including 30 OECD countries can claim to run effective formal

comprehensive national land markets. Furthermore, McLaren (2011) discloses that effective land administration exists in only 50 countries in the world of which most are OECD countries. Although, these figures are not consistent, the literature arguably gives an indication of general trend in prevalence of good governance in land information harnessing in developed economies compared to SSA and other developing economies.

Compared to developed economies, a clear sign of absence of efficient and effective LIS and failure of LIS to support efficient real estate markets in most developing countries is arguably shown by low level of land registration coverage. For instance, in many developing countries 24 years ago, the UNCHS (1990) indicates that about 90% of land parcels were estimated having no documentary evidence and for that matter unregistered. Also, about 14 years ago, De Soto (2000, p. 33) conducts a survey of 179 developing and former communist countries and estimates that 85% of urban parcels is informal and this implies that they are not registered. Furthermore, McLaren (2011) discloses that out of the estimated 6 billion land parcels in the world, only about 25% are formerly registered and greater part of these are associated with the developed world.

With SSA countries, the UNCHS (1990, p.5), Augustinus (2003) and De Vries (2004) report that less than 1% of Sub-Saharan African countries are covered by any kind of cadastral surveys. Furthermore, Toulmin (2009) reports that the West Africa region of SSA as a whole has only 2-3% of land held by written title. This low coverage figures suggest that there is huge information gap which may not be bridged when the public sector alone is relied on as supplier of land information as it is likely that state resources may be going to waste in running these agencies, which focal literature finds as nonperforming (Antwi, 2000; Hammond, 2006a; Hammond, 2008). Thus, an effective

method of securing sound land registration that underpins responsive LIS is required in UREMs in Ghana and other SSA countries.

2.2.2 Quality and Quantity of Land Information

Contemporary LIS and land information literature teaches that an efficient and effective LIS may be identified with quality and quantity of information it supplies. First, quality real estate market information according to Feenan and Dixon (1992) and Hammond (2008) must be reliable, accurate, relevant, verifiable, up-to-date, complete, and intelligible in order to have high value as a resource for decision-making. Drawing inference from this, one may argue that quality land information is composite in nature and even though quality is subjective (Klein and Leffler, 1981), what constitutes quality information is substantially abundant in literature as shown below.

Lützkendorf and Speer (2005) consider quality as the level to which characteristics of a product satisfies requirements and expectations of the client. In practical terms, quality information translates into aspects of what Van Oosterom and Lemmen (2001) observe that modern real estate market information users require: quality data; guaranteed reliable data; value for money; and fitness for use and tailor made product. Hence, it would appear that quality relates to reliability and usefulness of information.

In terms of information quantity, which in context is the depth of information content, quantity of information according to Needham and de Kam (2004) must further reveal restriction on land, possible future changes to adjacent land, good or poor accessibility, nearness to environmental nuisance, and reputation of the neighbourhood. Hammond (2008) broadens the scope of informational search content and emphasises that purchasers and creditors in SSA real estate markets apart from knowing or verifying the ownership of landed property must also know about other market information. According to Hammond (2008, p. 346) this must include *relevant market events and*

data such as comparable prices, available land and property for sale, the physical and environmental conditions and attributes of the property and its surroundings. Thus, Hammond's (2008) suggestions may be considered as a contextual argument since the attributes mentioned are not empirically based and therefore, they can be subjected to empirical verification with theoretical insights (see Chapters 7, 8, 9, 10).

Information requirements mentioned above and considered in this thesis is crucial and if can be supplied, it is likely to bring certainty in decision-making and market transactions (Bedard, 1986; Poe *et al.*, 1992). This may be possible due to information symmetry between buyers and sellers, creditors and potential debtors as well as all self-serving market participants and dealers. However, whether first, the market is willing to pay for this kind of information and second, existing state-owned public bureaus as information suppliers can best produce this information is fully not yet known or understood. Third, whether there is alternative viable method to supply such information upon removal of existing monopoly of state owned public land bureaus is fully unknown in Ghana and many SSA countries (see Chapters 7, 8, and 9).

2.2.3 Quality of Access to Information

Contemporary LIS literature further posits that an efficient and effective LIS supplies information that users require at low cost and tend to attract more users to the system (Bedard, 1986; Poe *et al.*, 1992). This point arguably reinforces the need for harnessing land information as a corporate resource as discussed in Section 2.2.1 and also under the conceptual framework in Chapter 5. In practical terms, quality of access to information translates into aspects of what Van Oosterom and Lemmen (2001) aptly note that modern real estate market information users require: faster procedure for land transfers; good access to quality data; and fast distributional channels. Hence, it can be argued that quality of access to information relates to timeliness and cost of access to information. Here again, whether existing state-owned land administration agencies are reliable for

delivering land information services at a reduced cost to information users remains as an issue to be tackled.

In other jurisdictions, however, Burns (2006) reports on how disagreement over cost of public access to land information and related service delivery has stalled government and private sector partnerships for information supply. Against the preceding backdrop literature, it is imperative to delve further into focal literature to discuss how LIS in UREMs can first be made to reduce information asymmetry and enable the price system work effectively for land information supply in REMs at competitive prices. Hence, succeeding discussions looks at both hypothetical but practical relationship between LIS and information users in REMs.

2.3 RATIONALE FOR HARNESSING LAND INFORMATION

Drawing insights from preceding discussions, one may vouch that real estate market information is a strategic renewable resource that needs harnessing and appropriately supplied to facilitate efficient transactions in real estate markets. Dale and McLaughlin (1989, p. 227) specifically aver that information is a resource that can be used in the creation of wealth. Indeed, most developed economies have demonstrated that land information is a valuable resource by taking inventory of ownership of landed property, ensuring information gathered is well maintained and managed through responsive LIS (UNCHS, 1990; Nichols, 1993; Dale, 1997; Zevenbergen, 2002; UNECE, 2005; Hammond, 2006b; Abdulai *et al.*, 2007; Stanfield and Licht, 2009; Williamson *et al.*, 2010). In addition, many of the land registries in these economies have become self-financing public agencies (Nicholls, 1993; De Soto, 2000; UNECE, 2005; Burns, 2006; Stanfield and Lynct, 2009; World Bank, 2011). This feat is achievable through conscious land information policies (see Section 2.5).

Following the experiences of the developed economies, there is substantial literature suggesting the need for developing countries also to acquire initial complete information through a national inventory of landed property ownership to facilitate a well-functioning land market (Dowson and Sheppard, 1956; Farvacque and MacAuslan, 1992; Hammond, 2008). The best method to adopt to enable this suggestion come into fruition, however, remains a huge challenge to many developing countries. This is notwithstanding that Deininger and Binswanger (1999, pp. 265-266) reveal developing countries efforts at LIS that:

Several countries are also attempting to establish market information systems that would reduce transaction costs and improve the availability of information about land prices and markets. These systems would help expand participation in sales and rental markets and thereby improve the acceptance of land as collateral by financial institutions. Such information systems would also help in developing, fine-tuning, and evaluating the broader framework for land policy, particularly in determining the degree to which distortions continue to apply, who exactly participates in these markets, and whether the interaction between land and credit markets is efficient.

Progress from the efforts so far is not impressive and, therefore, the advantages of having an efficient LIS as stated above are illusory. This is because there is massive failures with outcome less than anticipated. While the appropriate method to adopt remains a challenge, the consequences of the inefficiencies and ineffectiveness of monopolised state-owned land administration agencies in supplying information are evident in real estate markets. Chapter Three discusses this. Table 2.1, however, provides a summary of known challenges of monopolised land administration agencies in developing countries.

Table 2. 1: Challenges confronting land information systems in developing countries

Nature of Challenge	Summary of Issues	Sources
Technical	<ul style="list-style-type: none"> i) Maintenance problem or difficulties of sharing data between organisations; ii) Details of data poorly maintained and based on uncoordinated agencies; and iii) Land surveying lacks flexibility, predominantly method oriented and not cost-effective. 	UNCHS (1990), Sivam (2002), Augustinus (2003), Firman (2004) and Shen and Sun (2012).
Institutional	<ul style="list-style-type: none"> i) Much ignorance as to the true needs of service users; ii) Systems are unable to respond rapidly to demand; iii) Little awareness by the public about benefits of maintaining land registers up to date; iv) Information available to the public is scant; v) Access to institutions is wealth-based; vi) Failures to have positive and proactive policies about land and land information; vii) Not enough attempt to simplify or improve resource management and land administration since independence; viii) Processes usually time consuming and expensive; and ix) Rent seeking by lower level staff. 	UNCHS (1990), Okpala (1992), Dowall and Clarke (1996), Holstein (1996), Hirtz (1998), Sivam (2002), Deininger (2003), Augustinus (2003), Firman (2004) and Shen and Sun (2012).
Human Capacity	<ul style="list-style-type: none"> i) Shortage in trained staff; and ii) Inadequate human resources. 	UNCHS (1990), Kassanga and Kotey (2001) and Augustinus (2003).
Financial	<ul style="list-style-type: none"> i) Scarce financial resources and inadequate funding as budgetary support is low; and ii) Land information supply is in the exclusive domain of public agencies; 	Falloux (1989), Kassanga and Kotey (2001), Sivam (2002) and Augustinus (2003).
Interventions	<ul style="list-style-type: none"> i) Limited results achieved from attempts to modernise or set up new land information systems; and ii) Interventions worsening challenges. 	UNCHS (1990), UNECA (1996), Falloux (1989), Augustinus (2003) and Pritchett and Woolcock (2004).

Succeeding discussions, therefore, provide insights into the keys models that are being explored by other countries to overcome these challenges tabled above to contribute towards the development of a framework that can be used to address the above stated challenges.

2.4 LIS MODELS FOR HARNESSING LAND INFORMATION

Many countries make a conscious attempt to build National Land Information Systems (NLIS) for the benefit of both government and the citizens. In Britain for example, Morad (2002, p. 488) reports that as a result of the Citizen's Charter promise in 1992, that *a national land information may be one way to allow the citizen faster and easier access to an authoritative and comprehensive public record of all land and property*, the national land information service was officially launched in 1998. The NLIS led to a one-stop-shop in landed property information, hence, speeding up the home buying process, which often takes months to complete in the UK (Morad, 2002). There are other conscious attempts by many countries towards building and operationalising LIS as discussions that follow reveal.

Dale and McLaren (1999) have identified three main business models that different countries adopt for building and managing their NLIS. Based on the extent of government intervention and control through public sector land agencies, Dale and McLaren (1999) named the three models as centralist, non-interventionist, and limited intervention models. Each of these is concisely discussed in succeeding sections.

2.4.1 The Centralist LIS Model

The centralist LIS model hereafter referred to as CLISM, is the most common LIS model in many countries whereby all activities associated with delivery of National Land Information System (NLIS) are undertaken and controlled by public sector agencies (Dale and McLaren, 1999). Land information services under this model is

typically dominated and controlled by specialised state agencies through which the public accesses the information. It is normally characterised by absence of value added re-sellers who can also, provide innovative products and services beyond the kind of information traditionally required in the market (Dale and McLaren, 1999). The absence of these value-added suppliers contributes to two distinct land information service deliveries as follows.

First, notwithstanding that the CLISM constitutes a monopoly in land information service delivery, the model can provide efficient services and also enable wider access to land information by the public in some countries such as Sweden and Austria (Dale and McLaren, 1999) and Australia, South Africa and Thailand (Burns *et al.*, 2007). For instance, Dale and McLaren (1999) mention that as at 1996, the Land Data Bank System in Sweden had 22,000 terminals connected to a network of public agencies, municipalities, financial services, and real estate agents. Altogether, this network was generating about 200,000 land information enquiries per day and producing annual revenue of US\$180 million at that time. With this Swedish example, Ploeger and Van Loenen (2004) explain that land registration is handled by the local courts whilst the digital information is managed by a different organisation, the *Lantmäteriet*. This suggests that the registry processes the information but a different agency takes responsibility of managing the information.

Similarly, the Land Registry in South Africa according to Burns *et al.* (2007, p. 28) through a digital medium was receiving 40,000 daily requests for information. Furthermore, Burns *et al.* (2007) mention that in Australia, the centralised system works successfully because there is established links between the land register with intermediaries such as lawyers, surveyors, and financial institutions. There is also a well-established system of data brokers and electronic access to the register, which

facilitates direct public access to the public (Burns *et al.*, 2007). Tambuwala *et al.* (2011) corroborate that whilst the land registry maintains ownership information as part of a state or provincial government, information is sourced from other departments, local governments, developers, or surveyors. Also, according to Tambuwala *et al.* (2011), in some states such as Queensland and New South Wales, valuation data are collected by either in-house or by private valuers engaged by the state or local governments.

2.4.2 The Non-Interventionist LIS Model

The Non-Interventionist LIS Model (NILISM) is described by Dale and McLaren (1999) as an approach for creation and expansion of NLIS products and services by leaving activities entirely to market forces. By this approach, competition is generated in terms of all landed property information related products and services as the monopoly of the centralist model is avoided. This example is found in the USA where by public policy and legislation, “freedom of information” entitles taxpayers to access at the cost of media delivery (Dale and McLaren, 1999). Dale and McLaren (1999), however, note that NLIS developed under this model are typically not holistic and integrated compared to those based on the CLISM. Nonetheless, the burden on the tax payer is less because the NLIS is usually financed by the private sector and as a result, product and services are fully market driven.

2.4.3 The Facilitating LIS Model

Sandwiched in the CLISM and NILISM, Dale and McLaren (1999) describe the third model as the Facilitating or Enabling, or Limited Intervention Model (LILISM) as a compromised model, which avoids the extremes of the first-two model. Instead, the model provides a framework to promote partnership between the public and private sector to generate NLIS opportunities. As aptly observed, the degree of public sector

intervention varies and this can be classified into two categories as low degree of intervention and higher degree of intervention (Dale and McLaren, 1999).

A typical example of the low degree of intervention can be found in the United Kingdom where Dale and McLaren (1999) mention that the role of the public sector is to:

- facilitate generic development of standards for public and private sector data suppliers;
- simplify the route to the market, and to reduce access cost; and
- resolve access and data protection issues.

One key advantage of the low degree intervention model is that it encourages both private and public sector sectors to generate competing information services (Dale and McLaren, 1999). However, the structure in England, Wales and Scotland as pointed out by Ploeger and Leonen (2004) is that the registry and the digital information are managed by the same organisation. Hence, the registry processes and takes custody of the land information.

Unlike the British, the Dutch operates the higher degree intervention model by establishing the Dutch National Cadastre. In this instance, Dale and McLaren (1999) report that instead of leaving the private sector to identify opportunities independently and create information services, the Dutch National Cadastre has established a company known as the KADATA. This company according to Dale and McLaren (1999) invests directly in other private sector companies involved in providing information services. The advantage here is that, it provides a guide to the market, ensures maximum use of the Dutch National Cadastre's information facilities, promote market opportunities and shortens the time scale for generation of value added products and services (Dale and McLaren, 1999).

2.5 PRIVATE SECTOR PARTICIPATION IN LIS MODELS

From a global perspective, focal literature suggest that government interventions in real estate markets to deliver land information services is based on the monopolist model and capitalist model with a spectrum of options in between in different countries (Dale and McLaughlin, 1999; Burns, 2006). The monopolist model, which is predominant, exists when mandate to render land administration services is solely entrusted in specialised public sector land administration agencies (Burns, 2006). The model involves the private sector delivery of specific services on ad hoc basis such as surveying, notary, and valuation services as found in developed economies such Austria, Netherlands, and Sweden and in most developing economies including SSA countries (Dale and McLaughlin, 1989; Dale, 1997; Dale and McLaughlin, 1999). Unlike in the developed economies, the model is characterised with abysmal failures in Ghana as the context of this research. Chapter Three provides a comprehensive chronology of the failure of various attempts.

The second model thrives on government using private sector firms for land information services supply as found in the USA (Dale and McLaughlin, 1999) and Brazil and St. Lucia (Holstein, 1996). Under this, private title insurance companies and firms are involved in competition for collection, processing, storing, and dissemination of land information for distribution to the public (Stanfield and Licht, 2009). Apart from this, Burns (2006) provides a broad international perspective of some of the strategies to include first, land administration agencies that are operating as government trading enterprises and are self-financing as, for example, found in England (Stanfield and Licht, 2009). The second strategy involves public-private partnership arrangement for private sector involvement in land administration service delivery and revamping of land registry system as practiced in Ontario in Canada (Burns, 2006). Variants of these

two strategies exist in different countries with mixed results of successes and failures (Burns, 2006).

Considering the two main models of government interventions discussed above, countries that have been successful in collecting sufficient information on land ownership, value, use, and other land-related data are characterised with certain identifiable feature. These features include possession of reliable central data based on an efficient land registration system, delivering services at low cost, and equally have well-functioning and efficient real estate markets (UNECE, 1996; Stanfield and Lycht, 2009). In these countries including Germany, Netherlands, UK, and USA, land information is considered as a corporate resource and therefore, there is conscious investment to harness and maintain the information, which is sold at market value for profit (Hendrix and Rockcliffe, 1998; Stanfield and Licht, 2009). From the demand side, there is reliable and timely access to land information at prices that satisfies the requirements of their citizens (Hendrix and Rockcliffe, 1998; Stanfield and Licht, 2009). Thus, information flow appears relatively healthy compared to most SSA countries. Admittedly, there are some rudimentary but possibly taken for granted pathways that many SSA countries ignore or do not fully comprehend to enable healthy flow of information in UREMs. It is likely the review that follows may offer some signals as to what has been ignored or needs to be done.

2.6 LAND POLICY, MANAGEMENT AND ADMINISTRATION

The domain of LIS falls within a broader context of a land hierarchy consisting of land policy, land management then followed by land administration. The relevance of each these three broad components of the land hierarchy to an effective and efficient LIS is examined as follows.

2.6.1 The Land Policy Level

Improving on existing LIS within an overall land policy framework to tackle social, economic, and environmental issues of land management is an approach long suggested by the UNCHS (1990). Focal literature appears to subscribe to this approach with a proviso that land matters of a country concerning social, economic, environmental and legal prescriptions on use of land, and natural resources should start with a land policy that must fit into the national development plans and objectives of a country that ultimately leads to concrete actions being taken (Dale and McLaughlin, 1989; Williamson and Ting, 2001; Törhönen, 2004). In explicit terms, Törhönen (2004) opines that starting point of land administration is the development of a land policy as a guideline and a tool. Thus, UNECE (2005) considers land policy of a country as a framework for determining land use and conservation in order to meet its social and economic objectives.

Regarding many developing countries, however, there is a realisation that land policies implemented since the colonial time have failed to deliver expected social and economic outcomes (Nicholls *et al.*, 1999; FAO, 2011). This trend has continued after political independence with pressure from rapid urbanisation, globalisation, and sustainable development as present global drivers (Van der Molen, 2001). Some of the pressure is from the international community for introduction of western models of individual land holdings and land markets that has caused certain decisions to be taken. Key among this is implementing solutions to certain perceived problems before the breadth and depth of the real problem are understood (Nichols *et al.*, 1999) or when the solution itself is the problem (Pritchett and Woolcock, 2004). Hence, many land policy reforms aimed at changing land use management and administration practices have either failed or missed policy objectives largely due to poorly informed diagnosis (Deininger *et al.*, 2008; Obeng-Odoom, 2012).

The hope and opportunity to remedy existing policy defects arguably is not yet lost given that an attempt to remedy the defects lies with policy decision of respective countries as to how best to overcome existing challenges. For example, Nichols *et al.* (1999) argue that whereas economic conditions have caused governments to exploit alternative means to provide the necessary products and services more efficiently, the private sector on the other hand is looking for opportunities to increase its economic gains. Of course, under the presumption that the private sector can do what the market does best, there are various methods to exploit (Hayek, 1945; Niskanen, 1994; Nichols *et al.*, 1999; Burns, 2006). Chapter Four provides theoretical insights into the method that can be relied on to enable the private sector deliver products and services efficiently.

With the way forward on policy decision, Van der Molen (2001), for example, opines that for land policy development to achieve social and economic objectives it will depend on the political ideology of governments in power either capitalist or socialist oriented. Also, it will depend on whether policy implementation is likely to be a joint responsibility of private and public entities. This is under the presumption that government can discharge its task of setting a binding framework to serve as the rules of the game (Van der Molen, 2001). FAO (2011) corroborates that land policies explicitly and implicitly reflect political choices made concerning the distribution of power between the state, its citizens, and local systems of authority. Thus, FAO (2011) suggests that land policy choices rests with governments and their citizens towards addressing common challenges. Impliedly, effective solution to real estate market problem of information gaps lies with individual SSA countries. Making the right choice may yield dividends while a wrong choice too may obviously come with its cost to each country in relation to its land and land resources.

2.6.2 The Land Management Level

A LIS also has a link with land management, which is the second level of land hierarchy and appears to play an intermediary role between land policy and land administration. Henssen (1994) explains land management as being equivalent to land administration with land use planning added (Törhönen, 2004). Land administration in context is a process, which involves the determination, recording and dissemination of information about land tenure, value and use when implementing land management policies (UNECE, 1996). Hence, the relationship between these two concepts is that land management implements land policies by means of land administration (Van der Molen, 2001; Barry and Fourie, 2002; Steudler and Williamson, 2002; Alden Wily, 2003; Törhönen, 2004).

The explanations provided above appear to suggest that the difference between land management and administration is not black and white. Indeed, literature acknowledges that the line between both concepts is neither static nor significant (Henssen, 1994; Törhönen, 2004). Indeed, focal literature concur that land management and land administration are complementary sub-systems, where hierarchy is not always distinguishable (Barry and Fourie, 2002; Mukupa, 2011) and often one agency performs the same function (Alden Wily, 2003). Steudler and Williamson (2002) opine that land management is about controlling the processes that put land resources to good effect.

Technically, land management has a component of land use regulation such as zoning, placing ceiling on size of land holdings and environmental measures (Alden Wily, 2003). Törhönen (2004) aligns with this view that land management without proper land administration operates without any connection to reality and a weak land administration makes land management operations like abstract art. A classic example

could be the proliferation of slums in urban centres in many developing countries (Antwi, 2000).

Nevertheless, land management is important in the land hierarchy. As aptly observed by Dale and McLaughlin (1999) and also by Mukupa (2011), it is essential for economic development and sustainability of the environment, fostering good governance, and protection of civil societies. The UNECE (2005) supports this argument as discussed under the next section. Indeed, Williamson *et al.* (2010) indicate that land management paradigm of land policy builds governance directly into land administration. One may, therefore, draw an inference that LIS are crucial for land management and land administration since both appears to be two sides of the same coin as the following discussion shows.

2.6.3 Land Administration Level

Land administration is a subject well studied by experts such as De Soto (2000) and Deininger (2003). As the third level of the land hierarchy and domain of LIS, land administration has both working definition and functional explanation that suffices for this study. The UNECE (1996, p. 14) provides a working definition that:

Land administration is the process of determining, recording and disseminating information about the tenure, value and use of land when implementing land management policies. It is considered to include land registration, cadastral surveying and mapping, fiscal and multi-purpose cadastres and land information systems.

This definition is well accepted in the land administration literature (Dale and McLaren, 1999; Bogaerts *et al.*, 2002; Steudler *et al.*, 2004; UNECE, 2005; Bandeira *et al.*, 2010; McLaren, 2011). Underpinning the definition are certain assumptions two of which are

more relevant in this thesis because they raise concern for governance. These assumptions are that within an appropriate institutional framework:

- a) Sustainable development depends on a country having overall responsibility for managing information about the ownership, value, and use of land, even though the private sector may be extremely involved; and
- b) Both land and information about land are resources that must be husbanded in order to achieve economic growth (Dale, 1997; UNECE, 2005; Williamson *et al.*, 2010).

These assumptions are admittedly key to a LIS policy formulation (see Section 2) and useful in succeeding discussions. The functional definition that follows places these assumptions into context.

Dale and McLaughlin (1999) provide a functional explanation that land administration can be divided into four components namely juridical component which deals with land ownership; a fiscal component dealing with landed property values; and a regulatory component that deals with land use. The fourth component, which is land information management, is an integral part to all the three other components. Consistent with the UNECE (1996) definition, Dale and McLaughlin (1999) also place emphasis on the three attributes of ownership, use and value (Steudler and Williamson, 2002; Steudler *et al.*, 2004; Wallace and Williamson, 2006). The extent to which information about these attributes are required are assessed in Chapter 8.

In terms of the common method for harnessing information about the three attributes of land in most developing countries, Dale and McLaughlin (1999) aptly observe that the juridical, regulatory, and fiscal components are traditionally organised around three sets of agencies and each responsible for surveying and mapping, land registration and land valuation. Depending on the country or the stage of the country's economic

development and colonial history or legacy, the functions mentioned above are often performed in a fragmented and uncoordinated manner by different land agencies (Barry and Williamson, 2002; Steudler *et al.*, 2004; Törhönen, 2004). This does not discount the fact of recent trend of merging these agencies (see Section 3.5). In view of the fact that coordination of these separate agencies has been a major challenge to land administration, the integral role of land information systems has been hugely undermined (UNCHS, 1990). Realising that these agencies have collectively failed to recognise land information as a corporate resource, merging these agencies into a single body in order to ensure efficient and effective service delivery in land administration is a prescription by many studies and development partners (UNCHS, 1990; MLF, 2002; Barnes, 2003; Bandeira *et al.*, 2010).

Merger may not be the best solution to the problem of weak coordination among the activities of the land administration agencies. This is because evidence abounds that attempts in many developing countries are not yielding desirable outcomes one would have expected (Barnes, 2003; Bandeira *et al.*, 2010). This suggests that LIS remain largely dysfunctional in many countries. The research query, therefore, is whether merger is the only alternative approach for promoting efficient and effective service delivery in developing countries. Hence, from a LIS perspective, this study explores focal literature to find appropriate response to the query raised above.

2.7 MODERN TRENDS IN LIS OPERATIONS

The quest for a LIS to be effective and efficient in many developing countries has been an enormous task. This is because for such systems to be efficient and effective, Farvacque and MacAuslan (1992) suggest that they must:

1. Have a complete land registration base;
2. Be well known to facilitate knowledge of its users;

3. Process data or information in a timely manner; and
4. Be cost-effective

In the context of developed economies, appropriate modern LIS are providing or being introduced to provide and facilitate public access to complete and up-to-date information about the built and natural environment either at a commercial cost or at a reduced cost (Zevenbergen, 2002; Enemark *et al.*, 2005). The method that will enable these to happen especially with cost-effectiveness remains a huge challenge to many SSA and other developing countries as mentioned in Chapter 1 Section 1.0.

Also, the practice of relying on central governments funds or loans and technical support from Western development agencies' have over many decades proven not to be an effective remedy (Barnes, 2003; Pritchett and Woolcock, 2004). Thus, characteristic of the status quo is inertia and gross inefficiency, low productivity, and cost ineffectiveness (UNCHS, 1990; Falloux, 1998; Hammond, 2008). It has therefore, been argued that little justification exists for continuing with the current approach of relying on central government budget to operate a LIS and that there is the need for self-funding and cost recovery by land administration agencies (UNCHS, 1990; MLF, 2002).

Meanwhile, starting with the UNCHS (1990) suggestion that nothing revolutionary should be encouraged but, rather any response should be evolutionary by relying on existing government structures, other proposals in focal literature have made similar suggestions for resourcing state-owned land agencies in many developing countries (Barnes, 2003; Bandeira *et al.*, 2010). Thus, in order to develop an understanding of the appropriate means to having an efficient and effective LIS, the section that follows suggests how a modern LIS can look like.

2.8 LAND INFORMATION POLICY HIERARCHY

Against the backdrop of trends in modern LIS operations among others, there appears to be a window of opportunity to enable LIS deliver information that satisfies the demands of users in a cost-effective manner. For example, this can be found in a land information hierarchy framework proposed at three levels by Steudler and Williamson (2002), which appears to be along the line of land hierarchy discussed under Section 2.6. The three levels are land information policy, land information management, and land information administration. Each of these is briefly discussed after Figure 2.1 as follows.

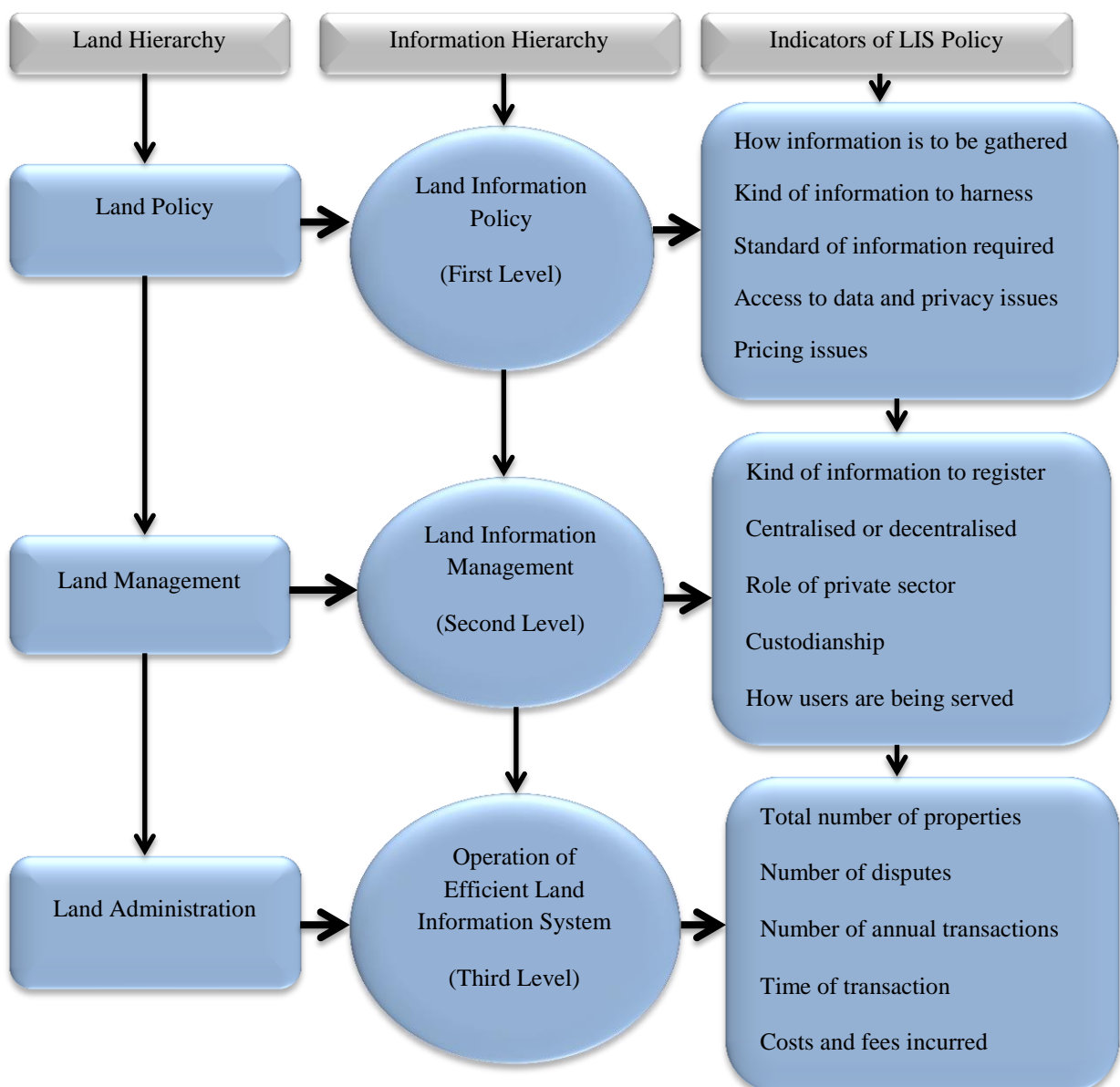


Figure 2.1: Operationalisation of a Responsive Land Information System
Source: Adapted from LIS Policy Hierarchy by Steudler and Williamson (2002)

In relation to Figure 2.1 above, Steudler and Williamson (2002) propose that at the apex of management levels in the context of land administration is a land information policy. The policy is expected to define how and what kind of information about landed property needs to be harnessed, the standards required, privacy issues, access to the information, and pricing policy on the information (Nichols, 1993). Steudler and Williamson (2002) elucidate that such a policy needs execution within a broader framework of land policy that provides the broad objectives and sets the rule under law and how land can be owned and used. Admittedly, this is essential because from a global study, (Burns, 2006) reports about national governments and other partners, especially, from the private sector have challenges over land information pricing against cost.

Regarding what information is to be harnessed, it is fundamentally known that the expected minimum is information about land ownership, use, and value based on the definition of land administration discussed earlier. Nevertheless, Hammond (2008) suggests that in SSA real estate markets, information about market data and environmental conditions is required. In any case, this is subject to theoretical sources and empirical verification (see Chapter 8).

The second level, which is the management control level, relates to land information management. Steudler and Williamson (2002) consider this as the processes to manage land information as compared to land management in land policy that ensures land resources are put to good effect. Under this level, Steudler and Williamson (2002) mention issues related to what information is registered, whether it is administered in a centralised or decentralised manner, what role the private sector is expected to play, issues about custodianship of information, and how information users are being served.

Again, these are genuine policy issues Burns (2006) identifies from international studies.

The third level of the land information hierarchy focuses on indicators for monitoring and evaluation of a responsive LIS. Steudler and Williamson (2002) suggest the third level is the operational control level, which involves LIS for harnessing information about landed properties. The key issue of concern here is about efficiency of the system in providing services with indicators such as total number of properties and parcels, number of disputes, number of annual transactions, turnaround time for transactions, costs and fees incurred for transactions and what human and technical resources are involved (Steudler and Williamson, 2002).

Regarding how Figure 2.1 can be operationalised as a responsive land information hierarchy, focal literature points out options that may be considered. These include first, making savings in current expenditures by operating as an enterprise and second, operating to increase revenue from current products and services or by marketing new products using existing resources (UNCHS, 1990; Stanfield and Licht, 2009). Whereas in developed countries, some government agencies are making it by some of these approaches, attempts in SSA and other developing countries appears far from what is supposed to be done and therefore are noted as not yielding any significant results from public choice theoretical perspective (Antwi, 2000) and transaction cost theoretical perspective (Hammond, 2006 and 2008). Perhaps a bespoke approach whereby the private sector under competition plays a critical role may be explored in Ghana from ETK (see Chapter Four).

The three levels of landed property information hierarchy from Figure 2.1 are relevant to this study and these are set out as follows. The theoretical and conceptual bases for how a responsive land information hierarchy may come into operation in the context of

this study are discussed in Chapters Four and Five respectively. Whereas Chapter Six provides the means for testing the conceptual framework developed from ETK, Chapters Nine, Eight, Nine, and Ten provide empirical results on the way forward for land information management framework and policy in Ghana.

2.9 LAND REGISTRATION SYSTEMS AS LIS TOOL

First, it is important to place land registration in perspective before exploring the relationship between an efficient registration system and LIS. The UNCHS (1990, p.7) suggests that land registration is the overall process of recording details about land parcels for the purposes of land ownership. A definition of this nature can be problematic because it appears too narrowly defined in relation to the prevailing function and objectives of land registration (Nicholls, 1993) in this 21st century. Nicholls (1993), however, places land registration system (LRS) in its perspective by stating that a land registration system is an example of LIS.

Indeed, land registration conceived in the manner mentioned above, is likely to offer the security of tenure that been touted. Abdulai *et al.* (2007) among others have tackled this issue so this study will not reinvent the wheel but to proceed to focus on what land registration is supposed to do.

In terms of what a LRS is supposed to do, Simpson (1976, p. 6) posits that *land registration is only a means to an end. It is not an end in itself. Much time, money, and effort can be wasted if that elementary truth be forgotten.* See also Feder and Nishio (1998). In this thesis, LRS are considered as a LIS tool for collecting, processing, storing, and dissemination of five key components of landed property information namely market data, ownership, use, environmental and public amenities information (see Chapter 8). For this reason, it is worthwhile examining focal literature on LRS towards efficient and effective LIS.

LIS operate through two major LRS all over the world. These registration systems are the deeds registration system (DRS) and title registration system (TRS) as significant body of focal literature acknowledges (UNCHS, 1990; Larsson, 1991; Dale, 1997; Palmer, 1998; Bittner and Frank, 2002; Zevenbergen, 2002; Karikari *et al.*, 2003;

Törhönen, 2004; Enemark, 2005; Rajabifard *et al.*, 2007; Enemark, 2009; Abdulai and Hammond, 2010; Williamson *et al.*, 2010; Abdulai and Owusu-Ansah, 2014). Currently in many countries, it is common knowledge that both systems primarily serve as means of recording and disseminating information on land owned, transferred by outright sale, mortgaged, leased, sub-divided, inherited, or encumbered and so on. Figure 2.2 on the next page shows the two registration systems within a framework of land policy.

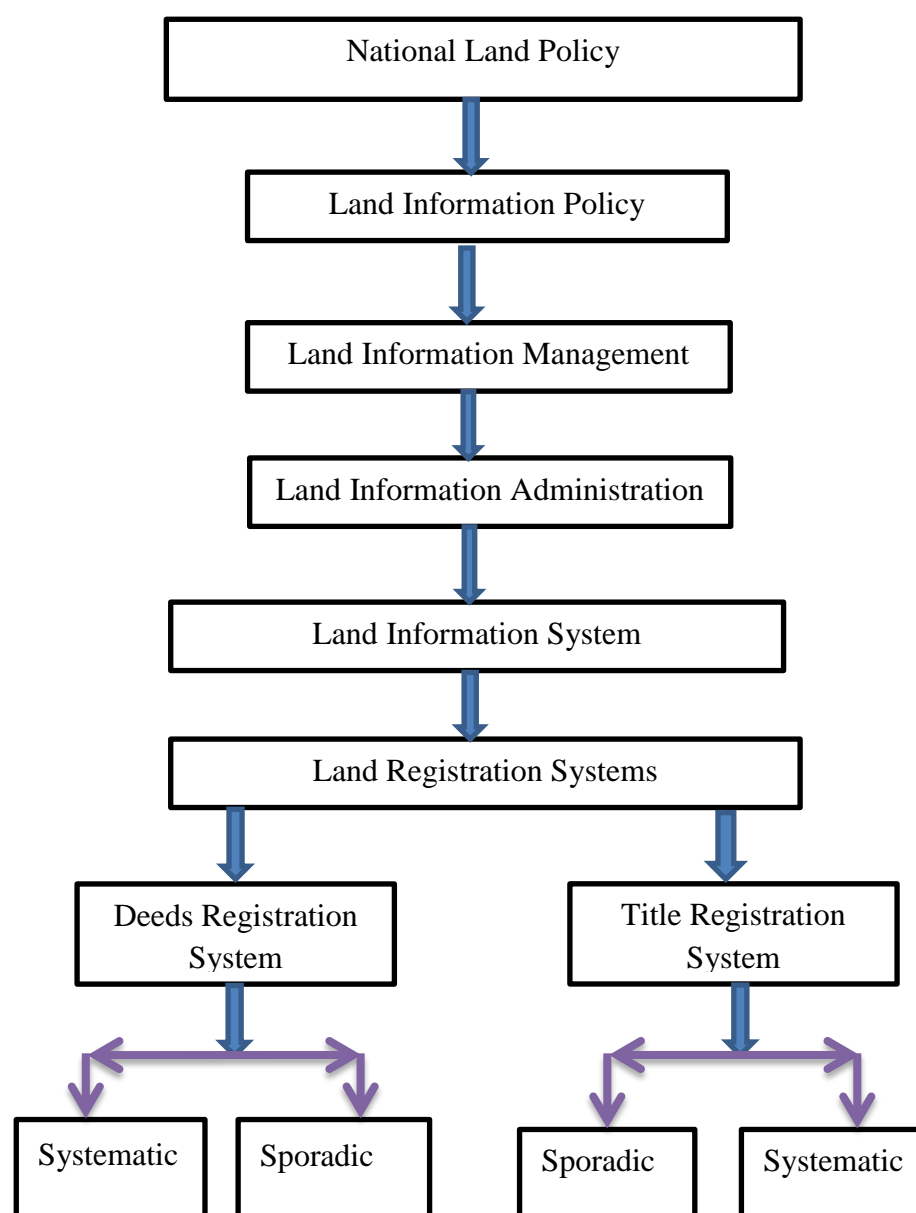


Figure 2.2: A Land Information System Policy Hierarchy

Source: Developed based on Larsson (1991) and Steudler and Williamsom (2002).

The DRS records and provides information about “who owns what” (Enemark *et al.*, 2005). This is because DRS has a primary function of recording the document of transfer of an interest in land for purposes of establishing priority of claims and serves as public records for inspection of copies of the document by those searching for owners of land to ascertain ownership (UNCHS, 1990; Hanstad, 1998; Williamson *et al.*, 2010). Hence, a DRS reveals “who owns what parcel of land” unlike the TRS, which reveals that ‘this land is owned by this person’. Pristine examples of countries

using the DRS of world best practice standard of efficiency and effectiveness equivalent to an efficient and effective TRS include the Netherlands and South Africa (Larsson, 1991; Zeverbengen, 2002; Le Meur, 2005).

Unlike the DRS, TRS has a distinctive feature of a title certificate being issued for a registered landed property. Thus the key difference between DRS and TRS is that accompanying the interest in land recorded under TRS, is a registration certificate issued by the registrar of a land title registry as a conclusive evidence of ownership to a particular piece of land recorded in a folio upon assessment of current state of title (UNCHS, 1990; Hanstad, 1998; Christensen, 2004). In line with this distinctive feature of TRS, there is a guarantee by the state under most efficient and effective title systems for land information on the register. The state provides a guarantee because in the unlikely event of undetected fraud or error by the registrar in vesting title in the wrong person or by failing to include valid encumbrances, anyone or user who inadvertently incurs losses from the inaccuracy of the information is compensated. The compensation usually comes from an indemnity fund set up by the system for such events (UNCHS, 1990; Hanstad, 1998; Christensen, 2004; Williamson *et al.*, 2010).

It is worthwhile mentioning that the Torrens registration system and English equivalent of title registration system emerged around the same time in the 19th century; the British system is based on the Torren system (UNCHS, 1990). Sir Robert Torrens developed and introduced the Torrens system in Australia around 1858 (Larsson, 1991; UNECE, 1996; Hanstad, 1998; Enemark, 2005 and Enemark *et al.*, 2005; Williamson *et al.*, 2010; Abdulai and Hammond, 2010). The system operates on three key principles identified by Rouff (1952, 1957) as the “Mirror” Principle, “Curtain” Principle, and “Insurance” Principle (Simpson, 1976; Larsson, 1991; UNECE, 1996; Hanstad, 1998; Christensen, 2004; Enemark *et al.*, 2005).

Impliedly, by the “Mirror” principle, land information emanating from title register must accurately reflect all relevant interests in land whereas by the “Curtain” principle, the implication is that information about unregistered interest need not constrain registered interests. The “Insurance” principle follows the curtain principle in that undisclosed interest in land are unprotected by state guarantees for losses occasioned by recording error or omission (Simpson, 1976; Larsson, 1991; Hanstad, 1998; Christensen, 2004). Hence, Christensen (2004) opines it is by virtue of the mirror and insurance principles that there is a folio for every parcel of land in the register, which enables reliable, simple, and easy access by individuals to information on all recorded interests or encumbrances to a particular piece of land in the title registers. Apart from Australia, countries that have adopted the system include New Zealand, Western States of Canada, Malaysia, and some African countries including Ghana (UNECE, 1996; Enemark *et al.*, 2005).

From LIS perspective, the issue that arises is whether these principles can apply to DRS since countries such as the Netherland and South African each operates a DRS equally good as a TRS. This is because a LIS can never deliver perfect information due to an unavoidable inherent uncertainty in land data gathering (Bedard, 1986). Since LIS are supposed to integrate data on ownership, value, and use and other land related resources, Bedard (1986) identifies three options available for tackling the uncertainty problems as: (i) do nothing; (ii) reducing uncertainty; and (iii) partially or completely absorbing remaining uncertainty.

Bedard (1986) and the UNCE (2005) explain that uncertainty reduction is achievable through use of appropriate technical, procedural, organisational, and legal requirements among which is mandatory registration of all the rights in land among others. On the other hand, uncertainty absorption occurs when a LIS system compensates users of the

information for losses or damages incurred by relying on poor information provided with errors (Bedard 1986). More so, like with guaranteed title registration, Bedard (1986) obviously notes an inverse relation that the higher the uncertainty reduction in information, the lower the uncertainty absorption needed and hence, the more secure the information user. To reach this state, a right balance between both uncertainty reduction and absorption for a LIS is needed and this is a cultural, political, and economic matter, which according to Bedard (1986) is technical for uncertainty reduction but institutional for absorption of the remaining uncertainty.

Notwithstanding the above, there is a perception that TRS is superior to DRS because of two major reasons in principle. First, TRS provides the most current and reliable information about ownership faster and cheaper by avoiding the task of unnecessary or irrelevant historical search into the deed register for chain of title of ownership (Hanstad, 1998). Second, TRS is simple and delivers cheaper and speedier land registration service than DRS (UNECE, 1996; Ting *et al.*, 1999; Karikari *et al.*, 2003; Christensen, 2004). As LIS, it is arguable that be it DRS or TRS, the critical success factor is by what land policy, land information policy, and economic method can an effective and efficient harnessing of land information be achieved. Each of the system functions well depending on the conditions prevailing in every country (Hanstad, 1998; Ting *et al.*, 1999; Williamson *et al.*, 2010). As Abdulai and Hammond (2010) aptly note, in Britain, registration coverage is about 80% and, therefore, not every western country operates a comprehensive land title system.

Coronary to the above, follows the question of whether there the need for developing countries practicing DRS to change to TRS as being done in Ghana for example. Indeed, focal literature provides some answer to this which appears to suggest that what is critical is having a systematic registration instead of sporadic registration system

(Larsson, 1991, Törhönen, 2004; Williamson *et al.*, 2010). Figure 2.2, shown earlier, indicates systematic and sporadic registration systems as the basic technique of gathering land information.

In terms of efficiency in land information gathering, Larsson (1991) observes, generally the sporadic system of registration takes a long time to complete registration coverage, registration cost per unit is high, and usually, only systematic registration can provide an overview of all existing parcels and titles within an area. Thus, preceding discussions appear to suggest that a country may adopt either DRS or TRS but if the appropriate land information gathering technique is relied on to reduce information gaps in landed property information among the citizens; information asymmetry is likely to prevail.

2.10 REAL ESTATE MARKETS IN PERSPECTIVE

For purposes of clarity of meaning, the study places concepts of real estate markets (REMs) in perspective. The term real estate as used in this thesis refers to land on one hand and on the other, physical land and permanent features such as buildings attached to it (Dale and McLaughlin, 1999; Floyd and Allen, 2002; Torhonen, 2004; Bandeira *et al.*, 2010). Hence, real estate markets used in this thesis broadly refers to land, residential and commercial property markets (Gatzlaff and Tirtiroğlu, 1995; Gough and Yankson, 2000) as well as agricultural land. Hence, landed property markets used in this thesis also means real estate markets. Also, land markets and real estate markets are interchangeably used in this thesis for at least two main reasons as follows.

First, in many SSA countries, distinction between these markets especially between land markets on one hand and both residential and commercial property markets on the other hand is often not clear since demand for residential and commercial properties tend to converge on demand for a parcel of land (Sivam, 2002). Usually, the demand results in conversion of agricultural lands in sub-urban areas, which are acquired for incremental

development (Amanor, 2009). In addition, land in economics has a derived demand since its demand is determined by the various uses to which it is put to (Sivam, 2002; Hubacek and van den Bergh, 2006; Mahoney *et al.*, 2007). Furthermore, undeveloped land is also a very special type and quite unique from other landed properties such as residential and commercial properties as Toulmin (2009) aptly observes that it is at the heart of social, political, and economic life in most African economies.

Secondly and from a technical point of view, Alchian (1965) explain that land has two meanings; first, referring to land as any part of the earth not covered by water and second, referring to buildings attached to it in which sense land is the same as real property. Indeed, Bandeira *et al.* (2010) also mention that land administration laws, tools and policies normally deal with buildings and land together. Earlier, Hubacek and van den Bergh (2006) mention that in real estate economics, land serves a dual purpose, as a factor of production and as a product. Consistent with Hubacek and van den Bergh (2006), Mahoney *et al.* (2007) emphasise that land is both a product and a commodity and explains that from legal point of view, sale, transaction or transfer of land occurs over rights in the land but not physical land. The rights often described as bundle of sticks associated with any property, when identified properly, each represents a thing that relates to landed property in different ways (Dale, 1997). Practically, any efficient and effective LIS must capture all these as information in the system.

2.10.1 Assumptions Underpinning Efficient Real Estate Markets

Having placed real estate markets in context, it is important to state the underlying assumptions and premise for subsequent discussions that attempts to present a broad picture of the link between an efficient and effective LIS and efficient flow of information in REMs. Hence, the discussion systematically starts on a premise of what a

perfect market situation promises to be like to consumers followed by the relevant assumptions and caveats that makes participation in REMs practical than the ideal.

Mainstream economics perfect competitive market model formalised by Arrow and Debreu (1954) on one hand assumes that buyers have complete information about sellers and products in the market under general equilibrium analysis (Stiglitz, 2000). Contrarily, there is the realisation now that information is imperfect, can be costly to acquire, and there are information asymmetries between transacting parties across all markets (Byamugisha, 1999; Stiglitz, 2000). With real estate markets transactions, Quan and Quigley (1991) for example, from an empirical study on price formation argue that the competitive market model does not adequately portray the trading environment in real estate markets. Quan and Quigley (1991) and also Harvey and Jowsey (2008), therefore, provide three important features that distinguish the price formation process of real estate markets from the standard equilibrium model. This is summarised as follows:

- (i) Participants in the market often have incomplete information about the attributes of properties and decisions to purchase and sell are often made based on partial knowledge;
- (ii) Costly information search incurred by potential buyers given the heterogeneity and fixity of a landed property; and
- (iii) Trade are decentralised, and market prices are the outcome of pair wise negotiations

Having established the premise for further discussions, underpinning subsequent discussions are two crucial assumptions. The first assumption is that if there is a willing seller and a willing and able buyer, then all things being equal, relevant market information is required for an efficient and effective real estate market transaction to be

completed. This assumption fulfils the funds availability condition and convenience and dividend explanations of market transactions (Viswanath and Szenberg, 2010). The presumption here is that healthy flow of relevant information is likely to make potential parties to a transaction aware of available market opportunities (Harrison, 1997; Harvey and Jawsey, 2008) and reduce uncertainty and information asymmetry (Chevas and Pope, 1984; Poe *et al.*, 1992; Viswanath and Szenberg, 2010). Given that the underpinning assumption holds, then efficient transaction in the market is contingent on information availability factors provided by Ford *et al.* (1988) and some notable requirements for an efficient REMs suggested by Hammond (2008) and (Nkurunziza, 2008).

Ford *et al.* (1988) suggest three information availability factors that facilitate buyers' search and verification of goods as:

- (i) Whether information from an independent third party about the veracity of a sellers claim exists;
- (ii) Whether the buyer knows about the existence of such information to consult;
and
- (iii) Whether the buyer knows about the cost of the information required.

Hammond (2008) also suggests that for real estate markets to function efficiently certain basic requirements must prevail. Notable among the requirements are;

- (i) Clearly defined property rights or land tenure which must be known to the public with certainty;
- (ii) Readily available and complete information on the essential attributes of land and relevant market conditions; and

- (iii) Less onerous transaction costs.

The second assumption underpinning this thesis is that self-serving individuals having easy access to quality land information are likely to use it effectively (Pope, 2008). This assumption goes with a caveat that quality information does not necessarily guarantee good decision making by individual actors in the market. As Dale and McLaughlin (1999) indicate, the final decision rests on the qualities of the individual users as well. Hitherto, Quan and Quigley (1991) and Wilhelmsson (2008) provide that strong buyer negotiation power decreases the price and strong seller-bargaining power increases the price. Altogether, these underlying assumptions imply that all things being equal, if both sellers and buyers have equal quality and quantity of relevant information, the outcome of market exchanges is likely to be efficient. Also, transaction prices are likely to reflect the true values of landed properties in UREMs.

2.11 CONCEPT OF INFORMATION ASYMMETRY

Information asymmetry arises in a situation where sellers and buyers possess unequal information about the qualities of a subject matter of mutual transaction between them. As a concept, Akerlof (1970 and 2005) analysed information asymmetry using the market for used-cars known as “lemons” in American parlance. Akerlof (1970) applies the concept to a car market, which has both new and used cars, to demonstrate the relevance of accurate information about the qualities of both cars since a prospective buyer may not know the true qualities of a car displayed for sale except the seller.

With the introduction of the concept, economists have come to the realisation and acknowledge that information asymmetry can potentially undermine markets systematically and cause disruptions, contractions and eventually destabilise markets (Van der Molen, 2001; Garmaise and Moskowitz, 2004; Bronk, 2013). Subsequent explanations of the concept by Akerlof (1970), as applicable to UREMs, suggests that

in the market it is possible some prospective sellers will offer defective landed properties for sale, whereas others will offer lands or properties with good qualities. The defects or qualities may relate to the legal, physical, or other hidden attributes usually associated with landed property that are known to owners, sellers or their agents

The underlying explanation is that sellers with defective real estate product in the market are likely to reap the benefit associated with sale of non-defective real estate products. This is because both defective and non-defective real estate product sellers constitute the market rather than an individual seller offering better quality real estate for sale. As Akerlof (1970) opines, this practice may continue to a point where defective landed properties dominate the market until the market fails. However, before the market eventually fails, the symptoms of the problem tend to show and these include: uncertainty and dishonesty (Akerlof, 1970); having rich and poor information holders (Stigler, 1960); and opportunism and exploitation by rich information holders (Williamson, 1981; Ball, 1998; Clarkson *et al.*, 2007; Hammond, 2008).

Others include high cost of obtaining information (Grossman and Stiglitz, 1980); trade volume constrained (Feder and Feeny, 1991); and high transaction cost (North, 1990). Finally, both rich and poor information holders suffer as the victim as well as society as a whole, suffers from the adverse effect of information asymmetry (Clarkson *et al.*, 2007). In summary, the symptoms of information asymmetry in real estate markets may include uncertainty and high transaction cost of dealing in the market (Poe *et al.*, 1992) and high transaction costs are known to be sources of market failures.

The 1997-1998 crisis in Indonesia and Thailand (Childress *et al.*, 2004) and recent global financial crisis are examples that teach us a great lesson about the devastating effects of information asymmetry in real estate markets and its spill over effects on other sectors of any economic system (Tambuwalla *et al.*, 2011; Bronk, 2013). Childress

et al. (2004) account that overheated real estate markets played significant roles in the failure of banks during the crisis in Indonesia and Thailand and this has drawn attention to the role of urban land market dynamics, real estate development trends, and valuation systems in the stability of the region's financial sector. As Childress *et al.* (2004) aptly note, during the period of rapid industrialisation of both countries, the real estate sector was seen as having a link with the wealth of the economy and households. Hence, the sector through residential construction played a key role in the expanding the financial sector and also served as a major source of employment (Childress *et al.*, 2004).

In connection with the above, learning from experiences of others is crucial considering that UREMs can speed up or slow down economic development of a nation depending on how well these markets are functioning. For example, focal literature acknowledges that a well-functioning land market is essential for urban development (Mabogunje, 1992) and economic development (Dale, 1997). Whereas, Sivam (2002) opines that urban land markets operate also as a large investment market, de Soto (2000) and Wallace and Williamson (2006) indicate that successful land markets create more wealth for their economies and offer brighter opportunities for their citizens than economies with dysfunctional markets.

Mahoney *et al.* (2007) concur that land market development has a historical link to the development of a country, its economic well-being and the quality of life of its citizens. Williamson *et al.* (2010) provide an indicator that out of the 227 recognised nations and jurisdictions of the world, only about 40 or so nations of which, arguably 30 are OECD countries, can claim to run effective formal comprehensive national land markets. This suggests that successful UREMs indeed are key contributory factors to economic development of developed economies.

Arguably, many developing economies aspiring to become developed economies appear to recognise that dysfunctional UREMs may not support this upward task. This is because discourse on socio-economic development in many SSA countries over the past three decades focused on the importance and contribution of land markets in terms of land ownership, land rights, access to land, and security of tenure for economic development, sustainable livelihood and poverty alleviation (Devas and Rakodi, 1993; Toulmin and Quan, 2000). Following this, various land reforms in one guise or the other have been undertaken and other policies implemented with the aim of promoting economic growth, sustainable management of natural resources and poverty reduction (see Okoth-Ogendo, 1993; Toulmin and Quan, 2000; Le Meur, 2005; Sikor and Müller, 2009).

Ghana is arguably, one of the countries that have implemented various reforms and policies, yet with insignificant progress (Hammond, 2008). This implies that the policies implemented probably have huge challenges or perhaps not implemented in the manner required to make UREMs successful. Hence, this study explores a LIS perspective to examine why information asymmetry about landed properties remains a challenge in UREMs in Ghana, which is part of the preoccupation of the next chapter.

2.12 SUMMARY OF CHAPTER

This chapter attempts to put 21st century LIS policy in perspective by demonstrating that LIS throughout the world are subjected to common pressures to deliver reliable land information in a cost-effective manner to the public. The chapter has considered how the three LIS models, which are centralist, non-interventionist, and the facilitating models, are being relied on to meet the information needs in developed economies. Thus, the chapter shows that starting with land information collection since the era of civilisation to this 21st century, significant improvements have occurred over the years

in many countries over the methods of harnessing land information and quality and quantity of information gathered in relation to landed property. These, however, have been achieved through a LIS Policy, which Ghana lacks presently. The chapter, therefore, demonstrates the need for Ghana to have a comprehensive and responsive LIS based on policy for and appropriate framework.

CHAPTER THREE

LAND ADMINISTRATION IN GHANA

3.0 INTRODUCTION

This chapter addresses the third research objective. The chapter apprises the concept of information asymmetry in UREMs in Ghana by tracing its origin through a critical review of focal literature. The chapter proceeds to find out from relevant literature possible reasons for persistence of information asymmetry in UREMs in Ghana by examining the legislative, policy, and institutional frameworks adopted by successive governments since colonial time to tackle the issue. Staring first with a brief description of the land ownership system in Ghana followed by a critical review of the approaches adopted to tackle information asymmetry, the chapter ends with a summary of the review.

3.1 INFORMATION ASYMMETRY IN GHANA'S UREMs

It is important that before tracing the origin of information asymmetry in UREMs in Ghana, a general background of the land ownership system of the country is provided. This is imperative because the land ownership system in the country appears to be complex and this is an issue that one may argue requires a novel land information management approach to help simplify and made transparent for UREMs participants. Admittedly, the land ownership system in Ghana is an area well surveyed and covered by focal literature, literature on how the land ownership system may be captured or incorporated into a responsive LIS is, however, scanty. Hence, this study contributes in filling this knowledge gap.

3.1.1 Land Ownership Systems in Ghana

State and private land ownership systems are the two main types of land ownership systems in Ghana (Kasanga, 1984; Larbi, 1994; MLF, 1999; Antwi, 2000; Blocher,

2006; Abdulai and Ndekugri, 2007; Arko-Adjei, 2011; Abdulai and Owusu-Ansah, 2014). State land refers to lands acquired by government from the private land ownership system via various acquisition enactments and instruments. There is, however, a distinction between acquired state land and vested in that the latter splits interest in the land into legal and equitable interests. This implies that legal rights to manage and deal with the land are vested in government, whereas benefits from management of the land is held in the interest or goes to the original land owners depending on the purpose of vesting the land in the state.

With acquired state land, government is the absolute owner and these are lands often acquired for public uses. It is widely believed that state land ownership in Ghana covers about 20%, with vested land constituting 2% (Yeboah and Shaw, 2013). These values, however, are arguably doubtful in view of the fact that government in recent times has de-vested its interests in certain lands, whereas others still owned by the state have been largely encroached and one wonders how in the foreseeable future government can regain such lands (Antwi, 2002). A robust LIS is, therefore, required to update the ownership system and provide current data for responsive management of state lands. Presently, the structure to manage state lands is provided by the 1992 Constitution of Ghana and the Lands Commission Act 2008 (Act 767).

Private land on the other hand refers to stool/skin lands, family/clan lands, and individual lands. Technically, these are lands customarily vested in the custody of chiefs, *tendambas*, family/clan heads and individuals depending on the customary practices among various tribal groups of which there are about 30 tribes (Abdulai, 2007). Also, depending on the traditional political system as either centralised or decentralised system, land ownership system may compose of hierarchy of authorities paramount, divisional and village chiefs or headmen with defined roles and

responsibilities in relation to governance of the subjects and lands (Abdulai, 2007). These hierarchies and structure of ownership are key and needs to be captured in any responsive LIS as focal literature suggests that private land ownership constitute 80% of land ownership in Ghana (Kassanga and Kotey, 2001; MLF, 2002) provided the coverage is not even more that what existing knowledge proffers. As aptly noted by Kassanga and Kotey (2001), bulk of the challenges with the land ownership system especially in Accra, is associated with customary and common law interest holders who are the first point of contact on the ground.

3.1.2 Origin of Information Asymmetry in UREMs in Ghana

Information asymmetry is a concept scarcely studied in the context of UREMs in Ghana and possibly, many countries in SSA, except in South Africa by Ebert (2001). Even that together with others who have studied the concept in REMs, the focus is not from a perspective of land information systems to address the problem of information asymmetry (see Van der Molen, 2001; Garmaise and Moskowitz, 2004; Lützkendorf and Speer, 2005; Pope, 2008; Glen, 2011; De Wit and Van der Klaauw, 2013). For example, Glen (2011) studies law and information asymmetry in markets for Foreign Direct Investment in real estate and concludes that legal attributes of real estate may be a potential source of information asymmetry in a particular real estate market.

Despite that information asymmetry may appear to be a norm in REMs in most cases, there is evidence that developments and trends in social economic, and legislative responses are contributing to minimise its occurrence in many developed countries (Lützkendorf and Speer, 2005). In the case of Ghana, knowing the origin of information asymmetry may offer a clue to finding a solution that is appropriate to tackle it. In this regard, it may be useful to reflect on an example of how vibrant land markets started in

Ghana in order to trace how it originated and what methods were explored to tackle but were ineffective.

Examination of focal literature suggests the non-existence of a vibrant land market during pre-colonial era of Ghana. Possibly, this is due to egalitarian nature of society, subsistence nature of the economy, sparse population, and inconceivable idea of an individual private ownership of land as a means of production (Hymer, 1970; Woodman, 1987; Falloux, 1989; Agbosu, 1990; Firmin-Sellers, 2000; Kasanga and Kotey, 2001; Wardell, 2005; Blocher, 2006; Abdulai *et al.*, 2007). Even if land markets did exist, Agbosu (1990) intimates there was no extensive acquisition that required definitive boundary determination; hence, disputed claims over boundaries and their settlement were uncommon. Indeed, in this modern time, development economists and land policy experts such as Deininger and Feder (2009, p. 236) opine that:

Informational asymmetries are less problematic when transactions take place mostly among members of the community who typically are familiar with each other's land rights even in the absence of formal land records.

Following the distinction between mercantilist and imperialist eras of colonisation of Ghana, then Gold Coast, the former was a period more characterised with the integration of the Gold Coast into the capitalist world, as a producer of gold and later human labour under the Trans-Atlantic Slave Trade (Howard, 1976; Agbosu, 1990; Olsson, 2009; Atuguba and Hammergren, 2010). The imperialist colonial era started from 1874 when Britain assumed full jurisdiction of the coastal areas of the country and declared it as a Gold Coast Colony until 1901 when the Ashanti Colony and the Protectorate of Northern Territories came under British jurisdictions (Bourret, 1952; Hymer, 1970; Howard, 1976; Abdulai, 2007; Olsson, 2009). It is within this era that

there is ample evidence of vibrant land market emerging in the Gold Coast. Thus, based on the work of Agbosu (1990) on land registration in Ghana with support from other focal literature, origin of the problem of information asymmetry in land markets may be traceable to a series of events that occurred during the imperialist colonial period in the Gold Coast.

Key among the events is the Industrial Revolution in Britain, which towards the end of the 19th century was a major contributory factor to swaying of activities of European traders in the Gold Coast into supply of precious metals, agricultural goods, and forest products that were in high demand for export because of the industrial expansions (Howard, 1976; Agbosu, 1990). According to Howard (1976) and Agbosu (1990), diversification occurred because palm oil became an essential ingredient for production of candles, soap, and machine oil and, market for cocoa as a new food to feed the contemporary working class. These opportunities received a spontaneous response from some native capitalist who ventured into commercial farming coupled with commercial agriculture, expansion in mining and timber industries at the same time contributed to a land concession boom (Agbosu, 1990).

The concession boom led to higher appreciation of land values, which induced radical change in land use pattern and communal tenure system caused by acquisition of land by firms, individuals, and groups of individuals for prospecting, mining, felling timber, growing of cocoa, or purely for speculative motives (Agbosu, 1990; Blocher, 2006). These activities in turn attracted migrant farmers and labourers among others to the Eastern Province of Akim Abuakwa where commercial activities were mainly concentrated at urban and commercial centres that were developing. This attraction resulted in increased demand for land by strangers or people from other areas beyond the concession areas and communities (Agbosu, 1990). The emerging land markets with

increasing land values as reported by Agbosu (1990) was left to operate on its own as boundaries between adjoining communities and areas remain not surveyed, demarcated, and undefined. Agbosu (1990) is apt to identify that this led to the twin problems of uncertainty and costly litigation, which undermined the capitalist exploitation of land resources.

For example, Agbosu (1990) mentions a number of key challenges that confronted the market and these are summarised and itemised as follows;

1. Vagueness in description of boundaries and imprecise nature of rights acquired through the use of standardised British conveyancing forms which later sowed a seed of disputes between ignorant and illiterate chiefs in the various communities;
2. Flouting of traditional rules regarding disposition of interests in community held property as laid down procedures required for an accredited chief and his councillors or head of family and his principal members depending on the type of land to have the legal capacity to deal with certain lands were ignored;
3. Identification of the accredited persons with legal capacity to deal with communal property was very difficult for strangers;
4. The British and other European capitalists with a very different cultural background from those of the local people had even a worse case in understanding the system; and
5. Defects inherent in the system were exploited by some individuals who after many purported sales of lands, alleged lack of capacity on the part of those carrying out the transactions.

From the fallouts of the concession boom, opportunism as a symptom of information asymmetry mentioned earlier (see Section 3.1), became the order of the day among

influential members of society and later chiefs who leased communal land to foreign capitalists (Agbosu, 1990; Firmin-Sellers, 2000; Spear, 2003; Blocher, 2006).

Other focal literature suggests that acts of opportunism exacerbated because the colonial administrators were unable to gain accurate information about the local customary land practices and their efforts also to monitor and sanction chiefs who abused authority vested in them by using the authority to achieve personal goals was severely hampered (Feder and Noronha, 1987; Agbosu, 1990; Firmin-Sellers, 2000). In the end, the description ascribed to the information asymmetry is what Agbosu (1990, 2000) and Agbosu *et al.* (2007) describe as two crippling problems associated with both statutory and customary land tenure system in Ghana are uncertainty in title and costly litigation which create an unfriendly environment for free market to work effectively. Agbosu *et al.* (2007) reveal that based on this traders and entrepreneurs advocated for the institution of a mechanism for recording titles.

It is interesting to note that the colonial regime begun to address problems of insecurity of title of ownership and not land information asymmetry, which arguably was the root cause of the twin problems of insecurity to title and high litigation costs. Hence, as Nichols *et al.* (1999) elsewhere observe, sometimes without an understanding of the real problem, solutions are prescribed and implemented before the breadth and depth of the real problem are well understood. With Ghana, Agbosu (2000) repeats that with the twin problems various governments have come and gone yet the problem remains despite various economic programmes and policies implemented. Indeed, Pritchett and Woolcock (2004) have argued that the persistent failures in policies and programmes in developing countries are largely attributable to solutions that are in themselves problems. Hence, discussions that follow examine how information asymmetry has

eluded governments and the relevant land sector agencies failure to diagnose the problem and tackle it appropriately.

3.1.3 Attempts at Tackling Information Asymmetry

Having traced and identified the possible origin of information asymmetry in UREMs to the concession boom, it appears logical and sound to examine land administration approach relied upon to tackle the issue. This is in terms of legislative, policy, and institutional frameworks that the colonial government and successive post-colonial regimes relied on to tackle the problem of information asymmetry in UREMs. It is anticipated that this examination may provide an answer or a clue to the question of why the problem continues to prevail in UREMs in Ghana, despite succeeding governments formulating policies and regulation to make the market function well.

The discussion is considered under three distinct regimes namely the colonial, early post-independence, and the neoliberal regime of Ghana. It is important to acknowledge the work of Agbosu (1990), Kassanga and Kotey (2001), Karikari (2003), Larbi *et al.* (2004) and Agbosu *et al.* (2007) in the subsequent discussions. However, this thesis adds to the existing knowledge by examining government structures put in place to help tackle the information asymmetry problem from a LIS perspective within the political ideology and economic orientation of the various governments up to this time.

3.2 COLONIAL APPROACHES

Critical examination of the land administrative structures that the colonial government relied on to tackle the information asymmetry problem may serve as a useful background to succeeding discussions. This is because the British colonial administration relied on bureaucrats to deliver land registration services following the enactment of Land Registration Ordinance (No. 8) of 1883, which introduced deeds registration system in the Gold Coast. This was an attempt to instil some order, increase

security of title, reduce land disputes, and facilitate financial investment in a rapidly emerging land market patronised by local and foreign capitalists predominantly involved in concession business, commercial scale farming, and the timber and mining industries development (Agbosu, 1990; McAuslan, 2003; Anim-Odame *et al.*, 2006; Abdulai *et al.*, 2007; Ampadu, 2011).

Nonetheless, the 1883 Ordinance was ineffective and, therefore, was replaced by the Land Registry Ordinance of 1895 as a modified version of its predecessor law in order to address the twin problem of insecurity of title and high litigation over land transactions. Technically, both Ordinances were unsuccessful largely because of failure to address the problem of lack of proper surveys and plans attached to the registration documents (Agbosu, 1990; Agbosu *et al.*, 2007; Ampadu, 2011). Thus, it is a noteworthy fact that considering the economic background against which the colonial administrators introduced land registration, registration was not intended to promote easy access to land markets by the poor, vulnerable, and disadvantaged individuals and groups in society.

The function of the Lands Department (LD), which was then established, was to register instruments evidencing concession grants, conveyance and transfers of interests in land under deeds registration system with focus on solving the problems of uncertainty regarding security of title and high litigation costs as the core problem (Agbosu, 1990). By extension, the LD was virtually handling all information on land including minerals and forests (Karikari, 2003). Notwithstanding this, Agbosu *et al.* (2007) report that the 1883 Ordinance was ineffective largely due to lack of adequate administrative operatives and qualified personnel to administer the registration (Thurman, 2010). Indeed, subsequent discussions based on Figure 2.1 later will show instability in the structures created, which some commentators describe that the LD has a history of

chequered development (Karikari, 2003; Nti, 2013). Invariably, the chequered history may equally compromise building of an integrated LIS database.

Kasanga and Kotey (2001) reveal that the Survey Department (SD) was established initially in 1901 as a unit of the Mines Department and this indicates the colonial master's motive for its establishment and main preoccupation of surveying prior to granting of concessions. However, it became a fully-fledged Department in 1907 and concentrated on surveying and production of maps and plans for various uses in the colony (Kassanga and Kotey, 2001). Karikari (2003) corroborates that prior to 1919, the LD started as a branch of Survey Department (SD) in the Gold Coast. Following reconstitution of the SD in June 1919, the LD became a branch of Public Works Department (PWD) between the period 1919 and 1928 as a Department handling land issues. Eventually, the LD was also established as specialised Department in 1928 and remained so until 1969 (Kassanga and Kotey, 2001; Karikari, 2003).

Arguably, because of the exploitative capitalist motive of the colonial regime, it would appear the colonial administrators were trying to bring land physically or territorially under the regime's control instead of considering harnessing information about various lands as a priority. In this way, information harnessed possibly could have facilitated indirect control of lands by the regime. A pristine example relates to the unsuccessful attempts in 1894 and 1897 to bring all unoccupied lands under colonial administration control in order to tackle reckless land concession grants.

These attempts mentioned above, sought to vest lands considered as vacant or 'waste' land in the Crown to enable the colonial government take control over the granting of concessions. However, there was strong opposition from both Chiefs and their subjects and the Gold Coast elite including concession speculators (Howard, 1976; Berry, 2002; Wardell, 2005; Ubink, 2008; Nti, 2013). The protest hinged on a long held customary

principle that there is no land in Ghana without an owner (Ollenu, 1962; Bentsi-Enchill, 1964; Asante, 1975; Larbi, 1994; Gough and Yankson, 2000; Gambrah, 2002; Karikari, 2003; Larbi *et al.*, 2004; Wardell, 2005; Blocher, 2006). Indeed, the ownership information is resting in minds of individuals and how to harness this information has been a huge challenge since then.

The Aborigines Right Protection Society played a leading role in opposing the Bill (Nti, 2013) and in addition to the recommendation by then Secretary of State for the Colonies, Joseph Chamberlain that communal ownership is likely to be flouted if the Bill was declared led to its withdrawal (Howard, 1976). Indeed, Wardell (2005, p.12) reports that a study commissioned by Governor Maxwell in 1895 on indigenous land tenure systems confirmed that *every piece of land in the Gold Coast had an owner*. Nti (2013) also, corroborates this. Ideally, this was an opportunity for an inventory of all lands to be conducted for building a reliable land information system yet, it was not utilised and this has continued to present time. Failing to utilise this opportunity, the colonial government rather went ahead to implement the Land Registry Ordinance with the aim of addressing problems of uncertainty and high transaction cost in land dealings in the Colony.

Based on the preceding discussions, one is likely to draw some tentative conclusion that land registration practices by the colonial administration resulted in certain challenges focal literature scarcely considers. This includes a registration system as a LIS tool introduced with the following:

- (a) focus on tackling the symptoms of information asymmetry such as insecurity of title and high litigation cost rather than tackling information asymmetry;
- (b) inability to increase the quality and quantity of information to overcome the uncertainty and high cost of acquiring unblemished legal title to land;

- (c) bias access to the public since the design and motive for introduction of land registration appears skewed towards local and foreign capitalist; and possibly
- (d) Administrative structures set up to execute land registration task over the years have assimilated the above as a practice that has become a culture and therefore, delivering information service along this line.

Karikari (2003) indeed acknowledges that the system of land administration in Ghana has become a British colonial legacy and enumerates some positive attributes of the colonial legacy among which is a system of land information that was purely manual but worked well, albeit the information was commonly distributed in registers, plans, maps and ordinances. Nevertheless, as subsequent discussions will show, it is arguable that assimilated legacies have not transformed significantly, as one would have expected after over 50 years of taking over from the British. Ad hoc improvement may be the best description one can suggest since Ghana gained independence. Figure 3.1 shows a summary of the trajectory of the Lands Commission starting with the SD.

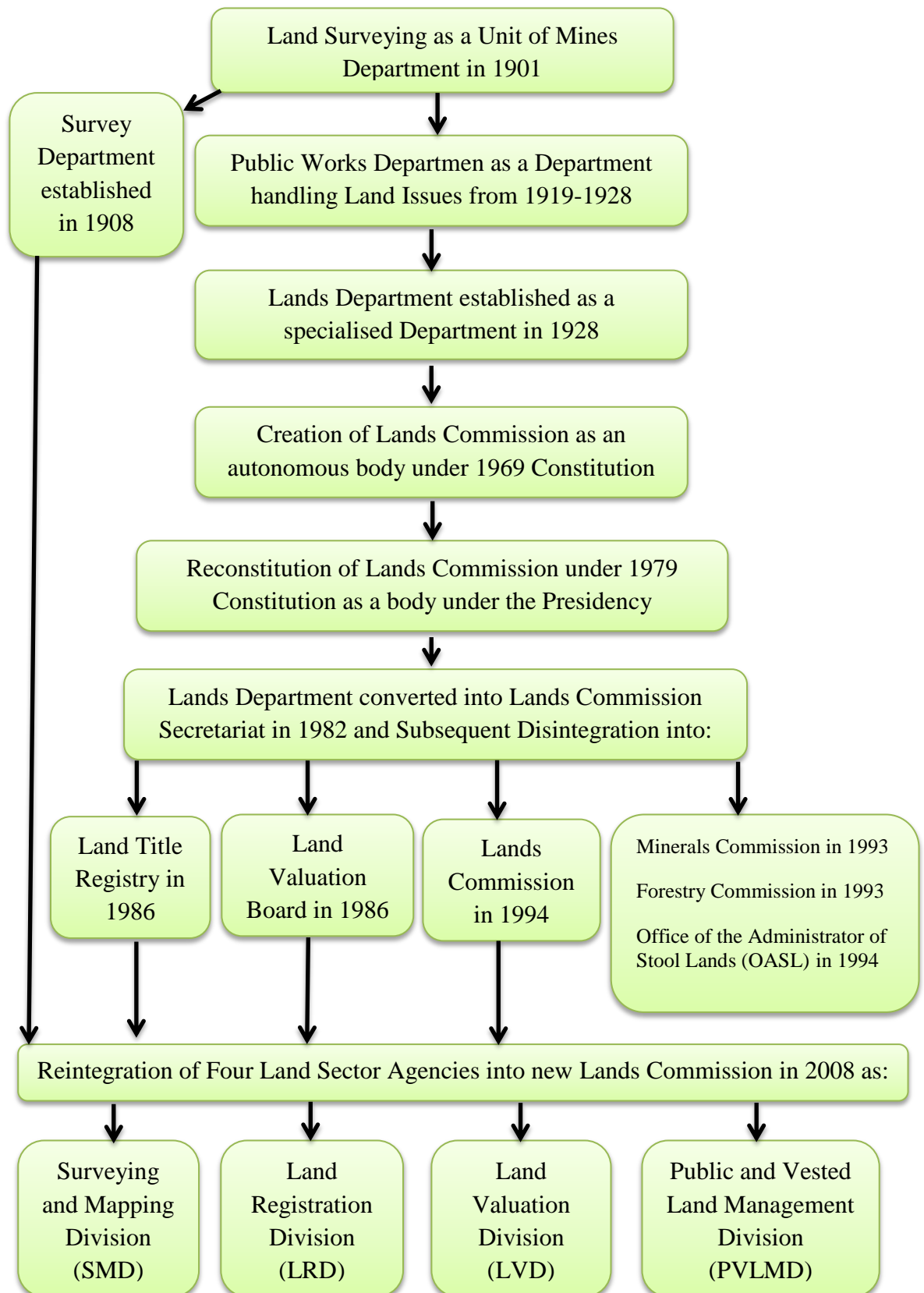


Figure 3 1: Evolution, disintegration and reintegration of the Lands Commission

Source: Adapted from Kassanga and Kotey (2001) and Karikari (2003).

3.3 POST-INDEPENDENCE APPROACHES

Consistent with the colonial era, it is instructive to examine the orientation of post-independence land administration structures towards land registration practices. This is necessary because apart from lessons that the colonial era offer, Karley (2009) also notes that from experiences in Ghana, the political and economic environment potentially influences the behaviour of property developers and investors. Indeed, as history shows, with constitutional governments in the country since independence in 1957, the economy has changed from socialist orientation government to free enterprise, mixed economy, and free enterprise system under various governments with different management styles (Debrah, 2002; Obeng-Odoom, 2009). Within each of these, a link between economic factors and political instability is identifiable (Aryeetey *et al.*, 2004). With military interruptions in the democratic regimes between 1957 and 1981, and each regime governing according to its political ideology, the overall picture of Ghana gives an impression of a country with mixed political fortunes (Debrah, 2002; Tsikata, 2007).

Elsewhere, Van de Molen (2001) intimates that the political ideology of governments determines the type of approach to land administration. It is, therefore, discerning to find out the impact of the fortunes on land information systems and UREMs through land administration agencies. Flowing from this, subsequent discussions provide a succinct overview of the political and economic environment over the past five decades in Ghana and examine land administration agencies within the period and the way forward. Table 3.1 attempts to show an overview of political and economic systems various regimes adopted in Ghana. It must be acknowledge that Larbi *et al.* (2004) have done some discussions on the economic policies pursued by various regimes up to 2002 in Ghana and even that not from a perspective of LIS.

Table 3. 1: Political regimes and economic events in Ghana since independence

Regime	Start	End	Political Regime	Economic Orientation
Convention Peoples Party (CPP)	1957	1966	First Republic*	Socialist economic System
National Liberation Council (NLC)	1966	1969	Military Regime	Pro-free enterprise System
Progress Party (PP)	1969	1972	Second Republic*	Free market economic System
National Redemption Council (NRC)	1972	1979	Military Regime	State enterprise system
Armed Forces Revolutionary Council (AFRC)	1979	1979	Military Regime	Anti-corruption exercise within 112 days in power
Peoples National Party (PNP)	1979	1981	Third Republic*	Free market economic system
Provisional National Defence Council (PNDC)	1981	1993	Military Regime	Welfare system
National Democratic Congress (NDC)	1993	2000	Fourth Republic*	Socialist and later free market economy
New Patriotic Party (NPP)	2001	2008	Fourth Republic*	Free market economic System
National Democratic Congress (NDC)	2009	To date	Fourth Republic*	Free market economic System

Source: Debrah (2002), Larbi *et al.* (2004), Tsikata (2007) and Frempong (2007).

The four constitutional regimes in Ghana since independence in 1957 to date are marked with apteryx in Table 3.1 above. The basis of the First Republic is the 1960 Constitution under which Ghana became a Republic within the British Commonwealth, with Kwame Nkrumah as the first elected President (Obeng-Odoom, 2009). The Second Republic comes under the 1969 Constitution, Third Republic under 1979 Constitution, and Fourth Republic under the 1992 Constitution of the Republic of Ghana up to this time. Larbi *et al.* (2004) provide some summary of the literature on economic policies pursued by the regimes up to a point.

3.3.1 First Republican Approach of Tackling Information Asymmetry

The first post-independence government of Ghana under the CPP government abandoned the capitalist approach to land management by the British colonial administration and pursued a socialist approach to land management in the country. This approach was based on the government's vision to steer Ghana towards a socialist

economic system (Debrah, 2002; Larbi *et al.*, 2004; Mends and Meijere, 2006; Tsikata, 2007). The political and social objectives of the government were driven by the 'Big Push' development agenda (Aryeetey and Harrigan, 2000; Hutchful, 2002; Larbi *et al.*, 2004) under which import substitution industrialisation policies were implemented favourable to the urban sector dominated economy the regime inherited (Firmin-Sellers, 2000).

The development agenda anticipated that gains from stimulating growth in the urban industrial sector would spill over to the rural areas through trade and exchange (Ampadu, 2011). Meanwhile, the information asymmetry problem in urban land markets construed as insecurity of tenure was one of the legacies the CPP regime inherited. The LD established during the colonial time, remained in charge of administration of both private and state owned lands (Kassanga and Kotey, 2001; Karikari, 2003). There was no apparent change in focus of the LD as the following shows.

Agbosu *et al.* (2007) provide some background where a 1954 UN Housing Mission memorandum publication indicates that the primary obstacle to housing in Ghana is land tenure insecurity. With this diagnosis, the CCP government enacted two successive Acts namely Land Development (Protection of Purchasers) Act of 1960 and Farm Lands (Protection) Act of 1962. These were specifically not laws for land registration but ad hoc laws aimed at providing security and certainty to buyers and owners of landed property to tackle the twin problems of insecurity of title and costly litigation. These laws, however, lacked potency to tackle the problem of title insecurity (Agbosu, 1990; Kuntu-Mensah, 2006; Agbosu *et al.*, 2007). This implies the 1895 Ordinance remained the effective land registration law in the country.

Following failure of both Land Registry Ordinance of 1895 and its predecessor, Land Registration Ordinance of 1883 to address the supposed twin problem of high transaction cost and insecurity, the Land Registry Act of 1962 (Act 122) was enacted. The Act sought to introduce some degree of compulsion in land registration by declaring that no instrument affecting land shall be valid unless registered with the exception of will and judges certificate (Woodman, 1987; Kuntu-Mensah, 2006; Agbosu *et al.*, 2007; Ampadu, 2011). Like the colonial registration Ordinances, Act 122 was defective in making accurate site plans as part of deeds submitted for registration as discussed earlier. A distinctive feature of the CPP regime is that the structure of the LD inherited from the colonial government remained as it was before independence (See Figure 3.1).

With the CPP centrally planned economic approach, there was proliferation of bureaucratic controls (Larbi *et al.*, 2004). Regarding the land sector, the CPP regime embarked on nationalisation of lands in order to control land ownership, transactions, use and development to achieve its development goal and among other reasons. These included ensuring equitable and easy access for developments projects, prevention of land speculation, and embarking on a political and legal campaign that stripped chiefs of the administrative and judicial powers hitherto assigned to them under colonial rule (Firmin-Sellers, 2000; Larbi *et al.*, 2004; Blocher, 2006; Ubink, 2008; Berry, 2009). Nonetheless, some land transactions were still going on as some supposedly recalcitrant chiefs and landowners continued to dispose of land.

By the beginning of 1966, however, economic policies of the CPP government as Debrah (2002) reports, was contributing to shortages of essential commodities whereas bribery and corruption became rife. Tsikata (2007) corroborates that compared to the time of independence by the mid-1960s Ghana became a land of declining living

standards. In addition, Karley (2009) mentions failure of the CPP regime to diversify the economy from timber exploitation as the basis of wealth generation for the country. These factors among others and the socialist-communist orientation according to Aryeetey *et al.* (2004) created an alliance between the military and police forces and some western interest outside Ghana to oust the CPP regime.

The National Liberation Council (NLC) military regime in terms of ideology discredited CPP's socialist path, abandoned the state led industrialisation policy and disposed of some public enterprises (Debrah, 2002). The regime sought to reorient Ghana into Western style market system by introducing trade liberalisation and financial restrictions (Debrah, 2002; Larbi *et al.*, 2004). However, like the CPP government, the NLC did not do much to change the status quo with land administration (Larbi *et al.*, 2004). Registration of deeds under Land Registry Act of 1962 (Act 122) remained as the effective law. The regime as Ampadu (2011) aptly notes was cautious with interfering with traditional land rights with hindsight of the CPP experience. Hence, information asymmetry problem remained a challenge in UREMs inherited by the next democratic elected government.

3.3.2 Second Republican Approach of Tackling Information Asymmetry

The Second Republican Constitution of 1969 paved the way for the Popular Party (PP) to come to power with a free market economic system. This regime encouraged private sector active participation in the economy, while it envisaged a larger role by the state (Debrah, 2002; Larbi *et al.*, 2004). In terms of land administration, Kassanga and Kotey (2001) cite the Akkuffo Addo Constitutional Review Commission report of 1969, which mentions that excessive abuse of state power in respect of land administration in the past necessitated creation of a Lands Commission (LC). Hence, by virtue of the 1969 Constitution and the LC Act 1971 (Act 362), a LC came into existence for the first time

in Ghana with the LD becoming a Secretariat responsible for day-to-day land administrative functions (Kassanga and Kotey, 2001). The LC was under the Ministry of Lands and Forestry, albeit being an autonomous body (Kassanga and Kotey, 2001). Nonetheless, the LC was operating through LD while the information asymmetry problem continued to fester. Indeed, Figure 3.1 shows no modification in the institutional structure for land registration. The Land Registry Act of 1962 (Act, 122) remained in operation.

The PP administration was short-lived because another military group under the National Redemption Council (NRC) took over political power from 1972 to 1979. The economic policies of the NRC reversed the free market enterprise system policy implemented under the previous administration by discrediting privatisation and rather reinforced government policy on state enterprises (Debrah, 2002). The economic policy of the regime was driven by policy of self-reliance and in the process it repudiated some external debts in addition to refusing to pay domestic debts (Aryeetey and Harrigan, 2000; Larbi *et al.*, 2004).

The LC with its Secretariat, the LD remained intact throughout the NRCD regime and was responsible for information harnessing using deeds registration system with no improvement in the status quo to ensure reliable supply of land information. The NRC was, however, overthrown by another military group the Armed Forces Revolutionary Council (AFRC) in June 1979 that intervened with a house cleaning agenda to stem corruption in the country (Debrah, 2002). The intervention lasted for about 112 days and insecurity of title and costly litigation remained an issue in UREMs carried over into the next regime.

3.3.3 Third Republican Approach of Tackling Information Asymmetry

National election under the 1979 Constitution of Ghana ushered in the PNP government, which did not change much from its predecessors in terms of land administration and the economy as a whole. Focal literature, therefore, suggests the regime has been criticised for failing to provide a clear path for economic policies and development (Larbi *et al.*, 2004; Tsikata, 2007). In addition, the 1979 Constitution reconstituted the LC with the same function and powers conferred on the previous Commission under the 1969 Constitution. Kassanga and Kotey (2001) and Karikari (2003) discuss the reconstituted LC at length. It is, however, essential to point out that Article 189 (7) of the 1979 Constitution sought to provide the Commission with greater autonomy and insulate it from political influence and consideration. An enabling Act, the LC Act, 1980 (Act 401) was enacted and under this the LC via its Secretariat was in charge of registration of deeds under the Land Registry Act, (Act 122).

The Administrator of Stool Lands was created and LC had overall supervisory role over its operations, which involved stool land management, collection of rents, dues, royalties and disbursements of these revenues (Kassanga and Kotey, 2001; Karikari, 2003). The Administrator of Stool Land, however, as envisaged in the 1979 Constitution, was never established as an independent body from the LC for unknown reasons. As Figure 3.1 depicts, the structure of the land sector agencies did not change and by implication the symptoms of information asymmetry, which are insecurity of title and high litigation cost remained the focus of the LC.

It is noteworthy to state that between the late 1970s and early 1980s, Ghana was facing problems with economic growth which reflected in a drop in real GDP growth rate from 7.82% to 6.25% in 1979 and 1980, respectively, and finally to 3.5% in 1981 (Tsikata, 2007). This contributed to military intervention in late December, 1981 under the

PNDC (Tsikata, 2007). Under this regime the structure of the LD, began to alter with creation of other Commissions and Agencies.

3.3.4 PNDC Regime Approach of Tackling Information Asymmetry

The era of the PNDC military regime from 1981 to 1992 brought significant changes into the structure of the land sector agencies. The regime enacted the Provisional National Defence Council (Establishment and Consequential Matters Amendment) Law 1982, (PNDCL 42) that made the LD defunct by conversion and splitting the roles of LD. Section 36 of the Law provided for the establishment of a LC with an Executive Secretary as the head and other members on the Commission constituted by the Council. The functions of the LC included formulating recommendations for national policy on land use and capability and maintaining up-to-date and record on public lands.

Second, the LD was formerly converted into the LC Secretariat, which among other functions was responsible for deeds registration in the country. Section 43 of PNDCL 42 also established a Land Valuation Board (LVB) from the defunct LD. The LVB took over the functions of compensation valuations for lands acquired by government and any public institution, preparation of valuation lists and property rate assessment, rents assessment for government rented premises. Section 48 of PNDCL 42 further established the Administrator of Stool Lands, which was responsible for stool land management, collection of rents, dues, royalties and disbursements (Kassanga and Kotey, 2001; Karikari, 2003).

Splitting the LD, it would appear, made no significant achievement towards addressing the problem of insecurity of land ownership, reducing litigation, and easy access to the deeds registration. The challenges that confronted the deeds registration system and the criticisms according to Woodman (1987) started with the Havers Commission Report of 1945 and aspect of recommendations made by the Law Reform Commission in 1973.

Woodman (1987) reveals there were proposals of effects of uncertainty about land titles with access to land without undue risk and the need for simplifying land transactions. Hence, it would appear that in addition to uncertainty and costly litigation, simplification of processes for land acquisition became an issue in post-independent Ghana.

Like 1883 and 1895 Ordinances, the absence of accurate plans required for registration in the initial stages, the sporadic process, and the exclusion of some traditional but valid oral grants undermined the success of the Land Registry Act 1962 (Act 122) passed to tackle the twin problems (Larbi *et al.*, 2004; Anim-Odame *et al.*, 2006). Attempt to address the problem with inaccurate surveys called for the enactment of Legislative Instrument 1444 Survey (Supervision and Approval of Plans) Regulations of 1989. The Act made it mandatory for a Director of Surveyor to approve of plans attached to deeds for registration. The provision under Act 122 which empowered the registrar to refuse to register a document that appeared defective on specific grounds, was never enforced (Woodman, 1987). The challenges with the deeds system provided the necessary grounds for the introduction of a title registration system while essentially the system was introduced for the sake of some business interests, as was the case with introduction of deeds system in the colonial time.

3.3.5 SAP and Land Title Registration Approach to Information Asymmetry

Following attempts to address economic decline encountered in Ghana between late 1970s and early 1980s, the PNDC government launched an Economic Recovery Programme (ERP) to tackle declining economic growth in the country (Tsikata, 2007). With backing from the Bretton Woods institutions, namely, IMF and World Bank, the ERP led to implementation of a SAP from 1983 to foster free-market opportunities and nurture private sector growth and development (Aryeetey *et al.*, 2004; Larbi *et al.*,

2004; Tsikata, 2007; Berry, 2009; Ampadu, 2011). Thus, Aryeetey *et al.*, (2004) emphasise that the SAP was aimed at reducing macroeconomic imbalances and execute structural reform to the economy through fiscal and monetary discipline among others. Grant and Yankson (2003) reiterate that the purpose of the policy was to curtail economic decline and to encourage growth. The economy was liberalised as a way forward in achieving the above.

Liberalisation of the economy under the SAP covered a wide range of policy measures that included:

- (i) privatisation of parastatals;
- (ii) introduction of competition in the economy;
- (iii) deregulation of the banking markets;
- (iv) active encouragement of the private sector;
- (v) promoting foreign direct investment;
- (vi) reduction of public services; and especially; and
- (vii) trade liberalisation (Grant and Yankson, 2003; Aryeetey *et al.*, 2004; Berry, 2009).

Berry (1997) reports that with reorganisation of some state agencies along private lines, the cocoa marketing board, COCOBOD, in the early 1990s relinquished its official monopoly over trade in cocoa export and began to compete directly with private firms. Aryeetey *et al.* (2004) also note that liberalisation of the banking sector for example contributed to competition in banking that led to innovation in the sector. Notwithstanding that the SAP brought some improvement in real GDP growth rates (Tsikata, 2007), Aryeetey *et al.* (2004) report that several studies suggest that it had severe effects on the poor especially with cuts in social spending on health and education among others. Impliedly, poor citizens could not access land registration services as the following shows.

First, land registration was a key component of the SAP for the reason that it was seen as opening financial opportunities for the private sector with hindsight that lack of funding was one of the main obstacles to successful land registration reforms (Agbosu *et al.*, 2007; Ampadu, 2011). Hence, title registration system was introduced via the enactment of Land Registration Law 1986, (PNDCL 152) and its enabling regulations the Land Title Regulations 1986 (L.I. 1341) by the PNDC government as the next major land reform effort by a post-independence Ghana government after the 1962 Act Land Registry Act, (Act 122). It became operational in 1988 (MLF, 2002) with the expectation that challenges associated with failures of Land Registration Ordinance of 1883 and the Land Registry Act, 1962 (Act 122) will be over (Woodman, 1987; da Rocha and Lodoh, 1999). For example, the memorandum to the law mentions cardinal reasons for introduction of title registration. These include providing certainty and facilitating proof of title in landed property. Also, to enable dealings in land safe, simple, and cheap in order to prevent fraud on purchasers of land and mortgagees (da Rocha and Lodoh, 1999; Burns *et al.*, 2007; Jones-Casey and Knox, 2011).

Second, the introduction of land title registration in Ghana arguably followed a trend quite similar to the introduction of deeds registration by the colonial administration. This is because the enactment of the Land Title Registration Law in 1986 like the 1883 and 1895 colonial Ordinances was aimed at satisfying demands of the local and international business community (Agbosu *et al.*, 2007; Ampadu, 2011) as envisaged under the SAP. Invariably, one of the indirect effects of the law is creation of another LIS system from the deeds system with the hope of integrating database from the deeds system into the title system.

Third, the title registration process so far had been negligible (Kassanga and Kotey, 2001) and poorly integrated (Jones-Casey and Knox, 2011). As Kassanga and Kotey

(2001) aptly note the system suffered from implementation defect due to inadequate funding and resources, personnel and logistic problems, administrative compartmentalisation through failure to build on the deeds system in existence. Others include departmental jealousy, bickering, and lack of cooperation and operators of the title and deeds system and sporadic and uncoordinated nature of registration that was supposed to be systematic (Zevenbergen, 2002; Ubink, 2008). Gambrah (2002) comments that security of title that the system was supposed to have provided did not happen. The title registration, which started in Accra in phases and Tema, which is a harbour city and commercial hub in the GAR and some parts of Kumasi, the Ashanti Regional capital in Ghana (see Figure 1.1), presently covers the whole of the GAR with the deeds registration system technically phased out.

Finally, Adlington (1998, cited in Gambrah, 2002) reveals that there are 30000 backlog title applications at the title registry in Accra and growing at a rate of about 3000 every month. Jones-Casey and Knox (2011) declares that between 1986 and 2006 only 42,000 land registration applications were submitted to the title registry and about 30% of these total actually were registered. This implies that between the periods under consideration a search for title information at the registry had a 70% chance of accessing no recorded information in the register. This further implied that the real estate market was denied of information on 29,400 properties in the market. It is noteworthy to mention Jones-Casey and Know (2011) who hint that the courts are clogged with 35000 land disputes. Again, it is arguable that the effective discharge of these cases possibly depends on the availability of credible information.

Notwithstanding the various interventions, Agbosu *et al.*, (2007) and Barry and Danso (2014) mention that chieftaincy disputes, protracted land disputes and litigation continue to occur because of the following:

- (i) loss of public confidence from courts despite various interventions;
- (ii) people resorting to self-help such as engaging land guards;
- (iii) encroachment on public land;
- (iv) multiple sales of land;
- (v) freezing land for development; unapproved developments; and often
- (vi) violent confrontation.

With all these problems saddling UREMs in Ghana, it appears information asymmetry still remains unknown as the root cause of the problems. This is notwithstanding the fact that Gambrah (2002) and Blocher (2006) indicate that the cumulative effect of many studies and broad consultations on various platforms to ensure effective and efficient land supply system led to the formulation of the Nation Land Policy (NLP) document during the Fourth Republican era (see Section 3.7). Thus, a look at the NLP will be useful and insightful at this stage. However, before examining the NLP, it may be appropriate to discuss the transition process of the PNDC military government to a civilian NDC government under a multiparty democracy regime that began in 1992.

3.3.6 Fourth Republican Approach of Tackling Information Asymmetry

The prevailing constitutional dispensation in Ghana started under the 1992 Constitution of Ghana. The Constitution is based largely on the US system of government by vesting executive power in the President elected by universal suffrage every four years (Aryeetey *et al.*, 2004) for a maximum of two terms. It is noteworthy to mention that under the present dispensation, the LC has gone through two major structural changes first in 1994 and in recent time in 2008. Each of these is briefly discussed as follows.

Article 258 of the 1992 Constitution makes provision for the establishment of a LC whereas Articles 259 and 260 provides for membership of both National LC (NLC) and Regional LC (RLC), respectively. Article 259 empowers the President to appoint a

National Chairman and members of the NLC including an Executive Secretary for the LC Secretariat. Article 260 makes provision for replication of the membership of the NLC in each of the ten regions of Ghana. Each RLC has a Chairman and members including a Regional Land Officer who acts on behalf of the Executive Secretary. The mandate of the LC by virtue of Article 258 (1) of 1992 Constitution include managing public lands, formulating land policy and advising government, local and traditional authorities on land use and assisting in the execution of a title registration program throughout the country (MLF, 2002; Blocher, 2006).

By constitutional design, the Commission is supposed to be an independent body as Article 265 stipulates that *the Commission shall not be subject to the direction or control of any person or authority in the performance of its functions*. However, Article 258(2) provides that the sector Minister may *with the approval of the President give general directions in writing to the Commission on matters of policy in respect of the functions of the Commission*.

The Lands Commission Act 1994 (Act 483) re-established LC after the 1981 military intervention. The LC Act, 1994 (Act 483) provided three major sources of funding for the LC as government subvention, charge for services rendered, and funds received from sources approved by the Ministry of Finance (MLF, 2002). The MLF (2002), however, reports about low service charges putting pressure on the already weak revenue base of the LC. Hence, with this precarious situation, it is doubtful if the provision for autonomy of the Commission can ever be achieved.

Arguably, the 1992 Constitution may be perceived as falling short of unequivocally mandating the LC to focus on its information harnessing related functions. This is because the Constitution carved and established the Office of the Administration of Stool Lands, Minerals Commission, and Forestry Commission from the LC. Figure 3.1

shows these splits. For instance, by enactment of the Minerals Commission Act, 1993 (Act 450) and the Forestry Commission Act, 1993 (Act 453) the LC ceased to be the repository of documents related to both minerals and forestry concessions (Karikari, 2003).

Similarly, by virtue of Article 262 (2) of 1992 Constitution and subsequent enactment of Office of the Administrator of Stool Lands Act, 1994 (Act 481) that established the Office of the Administrator of Stool Lands (OASL) in 1994, the LC lost the role of stool land revenue collection and disbursement (Blocher, 2006). Nonetheless, Article 267(8) of the Constitution enjoins the OASL and RLC to consult chiefs and traditional authorities to formulate *a policy framework for the rational and productive development and management of stool lands*. With the problem of information asymmetry, it would appear this is a hardly performed jointly by these state agencies.

With all the elaborate constitutional set up, the LC as a government agency appears not to have identified information asymmetry as a core problem of title insecurity and costly litigation in UREMs in Ghana. Probably, there is a presumption that the NLP of Ghana has appropriately captured the problems bedevilling the land sector as that is usually cited as providing a comprehensive view of land related problems in Ghana (MLF, 2002; Gambrah, 2002; Karikari, 2003; Obeng-Odoom, 2012). Meanwhile, with land use planning for example, Obeng-Odoom (2009) argues that the policy appears to capture symptoms of land use planning failures as the problem in the urban markets. With UREMs, as shown in preceding discussions so far, it may be argued also that the policy catalogues symptoms of information asymmetry and provides prescriptions for tackling the symptoms as such.

3.4 NATIONAL LAND POLICY (NLP) OF GHANA

The NLP of Ghana, launched in June 1999 captures government strategy on the land sector to tackle many of the problems facing the land sector in the country (MLF, 2002). The policy document is held in high esteem because it is formulated based on cumulative effort of several studies some dating more than 35 years and discussions on various platforms to ensure effective and efficient land delivery system (MLF, 2002). Hence, the document highlights major issues bedevilling the land sector as inadequate policy and legal framework, fragmented institutional arrangement and weak institutional capacity and underdeveloped land registration system and inefficient land markets among others. The NLP points out that the issues have given rise to high incidence of land related disputes and litigation in urban areas, inadequate security of tenure, difficult access to land, thereby, thwarting urban development as well as general indiscipline in the market.

The goals of the NLP, therefore, include harmonisation of statutory laws, minimising and possibly eliminating sources of protracted disputes and litigation in order to mitigate economic costs and bring social and political upheavals under control. The others are to instil discipline in land markets in order to reduce the incidence of multiple and illegal sales, land encroachment, land speculation and racketeering among others. Last but not the least, is a goal to formalise land markets and promote self-financed land administration system.

It may be argued further that since the NLP document fails to identify the possible root cause of problems in the real estate sector, it prescribed ineffective methods or solutions to tackle the perceived problems. For instance, from the supply side of land information, the policy aptly identified the problem of lack of coordination, cooperation, and consensus between the land sector agencies (MLF, 2002). With policy

prescription, the MLF (2002) reports that a National Institutional Renewal Program (NIRP) was instituted by the government of Ghana to review the structure of public agencies towards improvement in level of service delivery.

The NIRP after reviewing the Land Title Registry according to the MLF (2002) concludes that restructuring of the land sector agencies into a single administrative unit was necessary. Indeed, this prescription is not much different from what the World Bank (2001 cited in Barnes, 2003) prescribes that the cadastre and registry function should be managed by a single institutions in many developing countries. Barnes (2003) reports the World Bank (2001) document promotes the concept of a single national level database which links cadastre and registry and is updated through local offices which send information into the centre. Meanwhile, Barnes (2003) hints that experience in Costa Rica shows that a simple cooperative agreement between the two institutions in-charge of surveys and the registry could not work.

Whiles the merger proposal was being considered, it was believed that restructuring is likely to lead to yield results that the private sector best delivers. Thus, with an intention towards cost recovery in service delivery, the MLF (2002) reports that prior to the inception of Land Administration Project (LAP) in 2003, a strategic framework to enhance revenue and service delivery was envisaged under cost recovery mechanism that:

- (a) Must be fair and socially equitable, simple, affordable and transparent;
- (b) Be flexible to meet changing economic circumstances;
- (c) Encourage mass registration of land within a target time frame; and
- (d) Encourage active participation of stakeholders in the formal market.

Whether the public sector can be relied on to achieve the above remains an issue. Also, whether the private sector can deliver what is envisaged appears not yet fully known.

3.5 TACKLING INFORMATION ASYMMETRY UNDER LAP

The LAP is an attempt to implement much of the framework for action outlined in the NLP. It is a 25-year long term commitment by government of Ghana to reduce poverty and enhance economic and social growth (MLF, 2002). The LAP is designed to be implemented in three phases over 5-years each. Phase 1 (LAP-1) was scheduled to be implemented between 2003 and 2008 but this was extended up to 2010. As shown in Figure 2.1, one of the major achievements heralded under LAP-1 is the streamlining of land administration institutions by the passage of the LC Act 2008 (Act 767) that merged four land sector agencies into one entity as a LC. The preamble of Act 767 indicates that a LC is established to integrate the operations of public service land institutions in order to secure effective and efficient land administration and provide for related matters. Indeed, Jones-Casey and Know (2011) point out that the 2008 LC Act aims at resolving bureaucratic inefficiency by consolidating the administration agencies into a single body. The Act received Presidential assent on 4th December, 2008 and immediately became a law.

Section 5 of Act 767 spells out the specific functions of the LC and one of the eighteen functions specified is to establish and maintain a comprehensive land information system. Others are to instil order and discipline into the land market and also minimise possible sources of protracted land disputes and litigations. Section 19 of Act 767 specifies the various divisions under the Commission, which are mentioned as follows.

In terms of the number of Divisions, Section 19 provides that the LC shall have the following divisions:

- (a) Survey and Mapping Division (SMD);
- (b) Land Registration Division (LRD);
- (c) Land Valuation Division (LVD);

- (d) Public and Vested Land Management Division (PVLMD); and
- (e) Any other Division the Commission may determine.

With SMD, Section 20 of Act 767 spells out the functions of the Division and this includes taking control and preserving records that relate to survey of any parcel of land. Section 21 outlines the function of the LRD and this includes registration of titles and deeds and also, to maintain land registers that contains records of lands and other interests in land. The function of the LVD is spelt out under Section 22 of Act 767 and this includes assessment of stamp duty. Finally, Section 23 indicates the functions of the PVLMD which involves managing state acquired and vested lands in conformity with approved land use plans.

It is important to recall that before and after the restructuring, all four previous agencies and now divisions were involved in a single registration. Thus, before 2009, the land registration system was driven by PSLAAs mentioned above that set their own benchmarks (MLF, 2002) and registration was piecemeal and cumbersome (Jones-Casey and Knox, 2011). Each agency had its challenges which are well articulated in focal literature (Agbosu, 2000; Antwi, 2000; Kassanga and Kotey, 2001; MLF, 2002; Gambrah, 2002; Sittie, 2006; Hammond, 2006a; Ubink, 2008). The summary of the challenges is that each agency was deemed as not responsive to service delivery and perceived to be characterised with red tapeism, delays and corruption.

In line with the summary above, the restructuring was aimed at addressing the perceived challenges via technical, financial, and managerial reforms (Ubink, 2008). However, since the restructuring was effected, Jones-Casey (2011, p. 2) posit that *There have not been any rigorous studies to determine its effectiveness*. Thus, it is without doubt that this study contributes towards bridging this knowledge gap from a LIS perspective assessment of the restructuring.

3.6 SUMMARY

In line with second objective of the study, this chapter has traced and identified that information asymmetry associated with transactions in urban land markets is a major problem that has not been effectively tackled in Ghana since colonial time. This is notwithstanding that there have been several opportunities for the problem to be, first, nipped in the bud or, second, addressed when the symptoms of uncertainty and high transaction cost began to manifest in land transactions. The chapter also demonstrates that the concept of information asymmetry is unpopular in land administration in Ghana and is rarely mentioned as a key problem confronting UREMs in the country. The absence of land information policy to guide land information harnessing is also noted.

The chapter also reveals that whereas attempts were made by various regimes to pursue a capitalist development agenda, like the colonial administrators, all the regimes relied on bureaucrats to deliver their land policies. Hence, with respect to land administration, the approach utilised did not differ much from the legacy of the colonial government. Furthermore, chapter highlights that PSLAAs have on four successive occasions failed to manage land registration systems as a tool to harness land information to enable easy access and to ensure certainty before, during, and after transaction in UREMs in Ghana. These unsuccessful attempts include the enactments of Land Registration Ordinance of 1883, Land Registry Ordinance of 1895, Land Registry Act, 1962, and the Land Title Registration Law 1986 (PNDCL 152). Restructuring of four land sector agencies into a single LC via the LC Act 2008 (Act 767) enacted under LAP-1 too from all indications has not shown any prospects of solving the problem. This study, therefore, appears to be the first to empirically verify whether any significant improvements have occurred so far.

CHAPTER FOUR

THEORETICAL FRAMEWORK OF THE RESEARCH

4.0 INTRODUCTION

This chapter formulates a theoretical framework by exploring the concept of economic knowledge to verify whether deregulation of land information supply for competition among private economic agents is the appropriate method for tackling the problem of information asymmetry in UREMs. To formulate the framework, “Economic Theory of Knowledge” propounded by Hayek (1945) is explored as an overarching theory that provides sound theoretical foundation and relevant testable assertions on knowledge as a factor of production and a key ingredient in competition. Fundamental insights from this theory appear to suggest a causal link between monopoly by policy for land information harnessing and information asymmetry problem in UREMs. Subsequently, four kinds of relevant knowledge are identified in focal literature for verification of the theory.

4.1 ECONOMIC THEORY OF KNOWLEDGE

Economic Theory of Knowledge (ETK) propounded by Hayek (1945) has the central thesis that when the market price system is allowed to work in a market, the economic problem of society, which is utilisation of knowledge not given to anyone in its totality, can be solved (Boettke, 1989; Moss, 1991; Caldwell, 1997; Sechrest, 1998; Oguz, 2000; Dew *et al.*, 2004; Smith, 2005; Oguz, 2010; Bronk, 2013). The core idea of ETK about the price system is that the system serves as a mechanism for coordinating bits and pieces of economic knowledge possessed by individuals and conveys to individual economic actors such additional knowledge in a form of prices imbedded with economic information, which they need in order to enable them dovetail their economic plans with those of other actors operating in a complex capitalist market system (Hayek,

1945; Caldwell, 1997; Sechrest, 1998; Oguz, 2000; Butos, 2003; Dew *et al.*, 2004; Smith, 2005; Boettke, 2007; Gamble, 2007).

Hayek (1945) asserts that the price system works differently in different economic systems and considering competition, central planning, and monopoly, competition is a more efficient system that enables the price system to work better (Snow, 2002). Regarding its relevance to land administration, ETK *prima facie* appears to suggest that monopoly by policy like central planning can be a barrier to utilisation of knowledge and effective working of the price system for supply of services such as land surveying, registration, valuation and ultimately land information supply in urban real estate markets. This is because on a spectrum of efficiency, Hayek (1945, 1948 and 1972) considers competition superior over the other alternative economic systems on grounds that it is the most efficient system that enables utilisation of economic knowledge whereas central planning is the most inefficient.

Monopoly as a midway on the spectrum, depending on whether it arises by economic superiority, policy or collusion (see Section 4.5) can equally be an inefficient system for utilisation of knowledge for production of goods and services and as such must be removed when necessary (Caldwell, 1997; Guest, 1997; Lai, 2004; Heath, 2007). Hence, Hayek (1945, pp. 520-521) emphasises that it is under competition that *we can expect that fuller use will be made of local knowledge in society* to solve other problems confronting society (Birner and Ege, 1999; Snow, 2002; Butos, 2003; Beaulier *et al.*, 2005). The statement shows that ETK espouses limited presence of government in markets when necessary and deregulation of undesirable monopolies for competition in markets. The research query here therefore is:

What kind of local knowledge is required for competition to successfully ensure healthy flow of land information to bring information symmetry in UREMs?

The proposition for government to allow the market do what it does best by Hayek (1945) is an issue unabatedly debated and falls in line with an established tradition in economics. Indeed, Smith (1776, cited in Bekena, 2011) suggests limited government intervention in ownership and production due to its inefficiency in economic operations and management. Following this suggestion, many economists have pursued this tradition (Atkinson, 1994; Bekena, 2011). “Transaction Cost Theorists” (Coase, 1937; Coase, 1960; Williamson, 1986), “Property Rights Theorist” (Alchian, 1965; Demsetz, 1967), Public Choice Theorists from both “Rent Seeking Theory” (Buchanan and Tullock, 1965) and “Theory of Bureaucracy” (Niskanen, 1994) and “New Institutional Economists” (North, 1990) all seem to advocate for limited government intervention in markets, albeit not providing theoretical insights about knowledge and how the price system works (Dahlman, 1979). Hence, they appear not to have any overbearing explanation and influence on ETK (Dahlman, 1979) as a theory that considers knowledge and competition as its variables for government limited interferences in markets. The synergy is that most of the theories recognise the need for government restraints in markets and complements ETK.

ETK is, however, more appropriate contemporary economic theory for this study considering its immediate theoretical and ideological background with the former addressing assumptions about knowledge and the latter cautioning about dangers of centralisation of economic power. With these, focal literature acknowledges that ETK is a peerless economic theory of the 20th century that remains relevant in this modern time (Moss, 1991; Beaulier *et al.*, 2005; Caldwell, 2011; Bronk, 2013). Starting with the

introduction of the concept of division of knowledge, Hayek (1937, 1945) criticises general equilibrium theory notion of knowledge and competition as perfect and derives a new definition of equilibrium. The definition focuses on explaining the market process by which individual actors in a market will acquire the relevant knowledge necessary to approach the state of equilibrium in markets (Caldwell. 1997; Birner and Ege, 1999; Beaulier *et al.*, 2005). Regarding the market process concept, which is discussed in Section 4.2, Hayek (1937, 1945) articulates that knowledge and competition are never perfect and that the defining characteristics of equilibrium is the absence of the knowledge problem of society which the price system attempts to address under competition.

Following the pioneering criticism by Hayek (1937, 1945), the perfect market model has been strongly criticised in literature. It would, however, appear superfluous to present another review in this thesis except to provide relevant references (North, 1978; Stiglitz, 1979; Grossman and Stiglitz, 1980; Birner *et al.*, 1994; Evans, 1995; Zhu, 1997; Caldwell, 2003; Vanberg, 2004; Mooya and Cloete, 2007; Sullivan, 2009). Fundamental insights derived from the criticisms and comments firmly suggest that one would expect knowledge and competition for land information supply not to be perfect as different actors are likely to possess different economic knowledge.

Again, like the theoretical background, ETK has an ideological background that is still relevant and useful for cogent argument for decentralisation of economic decision making. Hayek (1944) uses “The Road to Serfdom” to oppose use of unworkable democratic but socialist utopian ideas that were gaining grounds and becoming policy practice in Britain and other Western economies at that time (Butler, 1983; Hoppe, 1994; Boettke, 2007; Bronk, 2013). Beaulier *et al.* (2005) opine that this criticism of the socialist idea equally suggests how certain political and legal institutions affect

economic activity. Also, it has been commented that the collapse of central planning system in former Soviet Union vindicates Hayek's (1944 and 1945) position that socialism is an unworkable system and incompatible with individual freedom and prosperity (Sechrest, 1998; Pennington, 2004; Caldwell, 2011). Hence, it is still arguable from the above that since monopoly by policy appears analogous to centralisation of economic power it may hold that monopoly is equally detrimental to society.

Nonetheless, some writers have equally questioned the trust in capitalism. For example the recent global financial crises which erupted in 2008 from the West appear to some analyst has undermined the price system and for that matter brings ETK into the limelight of contemporary economic issues of global concern (Bronk, 2013). Some analysts express the view that faith in the price system has been undermined due to misleading signals given by financial market prices over a long period of time (Bronk, 2013). Following the crisis, Bronk (2013) suggests ETK is an incomplete thesis because its analysis ignores the role of feedback loops, information asymmetries, and market power in distorting market prices. Critical review of literature suggests that as far back as the 1930s, Hayek had made recommendations to government to try and provide better information in the upswing about potential dangers in a market (Caldwell, 2011). As relevant to land administration, this study contributes to the debate as to whether indeed real estate market participants have first faith in the price system under competition.

Finally, against the preceding overview, two measurable theme that merits considering from ETK have been identified as follows:

- i) Dispersed knowledge as a problem of society; and

- ii) Competition is a more successful economic system because it utilises more of dispersed knowledge.

These themes are well rehearsed in focal literature (Butler, 1983; Zappia, 1996; Caldwell, 1997; Vaughan, 1999; Birner and Ege, 1999; Oguz, 2000; Dew *et al.*, 2004; Beaulier *et al.*, 2005; Gamble, 2007; Boettke, 2007; Heath, 2007; Caldwell, 2011). From the first theme, knowledge is a derived independent variable whereas competition as the dependent factor is derived from the second theme (Weiber and Kollmann, 1998; Dew *et al.*, 2004; Puusa and Eerikäinen, 2010). The process by which both themes are related to each other is considered in the succeeding discussion.

4.2 COMPETITIVE MARKET PROCESS IN UREM

The concept of market process is relevant to land information supply because it articulates how the knowledge utilisation problem is likely to be solved for the supply of land information in UREMs. Hayek (1945) elucidates on the concept as a dynamic process in which competition as a rivalry economic activity among economic agents, ensures that streams of knowledge is continuously discovered and used taking into account uncertainty about the future of which economic actors bear the consequences of their choices (Boettke, 1989; Caldwell, 1997; Oguz, 2000; Pennington, 2004). The concept is espoused by Hayek (1945) to show how two fundamental allocation functions are achieved in decentralised market systems (Zappia, 1996; Caldwell, 1997; Pennington, 2004). These are applicable to UREMs as follows.

The market process is impliedly likely to serve as a means of coordinating dispersed and different land information harnessing ideas possessed by potential land information suppliers in UREMs (Hayek, 1945; Boettke, 1989; Zappia, 1996; Pennington, 2004). Following this, one would expect that individual private land information suppliers may be able to exploit perceived subjective profit opportunities where means of action used

by successful competitors will be disseminated to the market for emulation by others. Thus, with the market process, information suppliers are likely to discover new economic facts such as least cost methods of production and consumer values by economic agents who are more alert than others to exploit previously undiscovered profit opportunities in the market (Hayek, 1945, 1948, 1978; Zappia, 1996; Pennington, 2004).

Indeed, it is via the market process that Hayek (1945) articulates competitive market solves the economic problem of dispersed knowledge that general equilibrium approach abstracts from. In effect, an attempt to eliminate the problem of information asymmetry in UREMs through wide access to reliable information must be conceived from the point of view as a market process. From this perspective, the price system that emerges from a market process performs two major functions that are likely to apply to land information supply in UREMs if the system is allowed to work through competition.

First, the price system serves as a means of coordinating bits and pieces of economic knowledge possessed by participating individuals as private information into market information which is used as the reference point that allows each individual to take advantage of knowledge of others for price formation (Hayek, 1945; Guest, 1997; Birner and Ege, 1999; Vaughan, 1999; Birner, 2002; Heath, 2007; Leppäällä, 2012; Brock, 2013). The price in this instance is not a mere figure but an indicator of relative scarcities of particular goods and services of whose unspecified qualities and attributes needs to be fully discovered (Lavoe, 1986). It is also a summary of the knowledge of individuals about their subjective values and production costs (Guest, 1997).

Second, having coordinated the knowledge and economic actions of individuals, the price system plays an informational role by communication signals about market events to markets dealers. The events include wants in the market, the extent to which the

wants are desired and are to be satisfied, as well as the profit and loss signals which lead to learning and spread of information for decision making in terms of how to bring price of production equal to cost (Butler, 1983; Vaughan, 1999; Snow, 2002; Beaulier *et al.*, 2005; Boettke, 2007; Heath, 2007; Brock, 2013). In brief, the signals enable market participants to identify opportunities for action and entrepreneurial discovery (Butos, 2003a). The signals also enable individuals to know how to allocate resources such as time, labour, and capital based on their local knowledge to satisfy the demand of others (Hayek, 1945; Vaughan, 1999; Beaulier *et al.*, 2005). Thus, given that the price system is allowed to work for supply of land information in UREMs, these are the likely signals to be received by suppliers to ensure healthy flow of land information.

The signals may come as result of a process, which is a distinctive feature of the price system that Hayek (1945, p. 526) articulates as how it works as an economising device as follows:

The whole acts as one market, not because any of its members survey the whole field, but because their limited individual fields of vision is sufficiently overlap so that through many intermediaries the relevant information is communicated to all.

Hence, Hayek (1945, p.527) asserts that the price system with minimum effort signals individuals engaged in economic activities about a range of market events which triggers responses discussed above. Bronk (2013) summarises this as signals for discovery of information about preferences, costs, requirements, and market opportunities that economic actors need to make good economic decisions.

It is worth mentioning that economists have accepted the explanation given to the price system by Hayek (1945) and this represents a modern version of Smith's (1776) invisible hand that induces mutual beneficial outcomes in markets (Stiglitz, 2000;

Bekena, 2011; Ştefanachi, 2011). The “Invisible Hand” is a metaphorical expression that summarises the belief of Smith (1776) that there is a self-regulating mechanism that works in free markets to promote welfare of society by channelling the unintended consequences of self-seeking individual economic activities to desired levels of production in markets (Debreu, 1984; Atkinson, 1994; Lowenberg, 1999; Blaug, 2001; Rima, 2001; Nelson and Winter, 2002; Boettke, 2007; Heath, 2007). It is similar to the invisible hand that Hayek (1945) articulates the price system occurs not by conscious human design, invention or control, yet it coordinates the economic ideas and actions of individuals and communicates same to guide producers to serve unknown consumers with unknown ends, which they need not to know (Caldwell, 1997; Vaughan, 1999; Pennington, 2004; Bekana, 2011).

The price system as relevant to land information supply in UREMs, prompts three crucial research queries that needs to be raised and appropriately answered are:

1. Can a policy of deregulation of monopoly enable practical knowledge for land information supply in UREMs be used for competition?
2. What kind of knowledge will be useful in competition? and
3. How can the price system be allowed to work to enable improved supply of land information in urban real estate markets?

Answers to the first and second queries are provided in Chapter Nine whereas the third query is addressed in Chapter Ten. These questions are posed under the assumption that relevant institutional environments that are equally conducive for individuals to act are in existence as well as those that facilitate, coordinate, or distort the process of

coordination in markets are taken care of (Hayek, 1945; Beaulier *et al.*, 2005). The assumption is necessary for at least two reasons.

First, Hayek (1945) concedes that the price system is not a perfect institution. Second, Hayek (1960) notes that cultural factors such as trust and norms, legal structures such as property rights, contracts and rule of law as well as a strong constitution are potential factors that underpin the market environment in which the price system works (Caldwell, 1997; Birner and Ege, 1999; Ikeda, 2004; Beaulier *et al.*, 2005; Brock, 2013). The absence of these conditions can undermine the price system such that if signals sent are false, some business decisions being pursued will end up failing whereas others will never be pursued. Consequently, when the price system is not allowed to function properly, error and inefficiency can occur in production (Hayek, 1945; Beaulier *et al.*, 2005). In effect, certain external factors that may undermine the price system from functional well are acknowledged.

4.3 CRITICISMS OF ETK

Criticisms against ETK remain debatable. For example, Gray (1982), Zappia (1996), Caldwell (1997), Beaulier *et al.* (2005), and Gamble (2007) argue that the overlapping nature of ETK with other works of Hayek (1937, 1944, 1948, 1960 and 1978) serve as the basis of criticisms by a cross-section of literature that it is an incoherent theory, and also misinterpret it by drawing on different parts of the theory. These authors among others, however, agree by consensus that ETK consists of coherent set of ideas (Gray, 1982; Zappia, 1996; Butos, 2003; Beaulier *et al.*, 2005; Gamble, 2007). Boettke (2002), for instance, reveals that some of the criticisms borders on semantic difference such as definition for knowledge and information.

Indeed as in information economics, Heath (2007) clarifies that information as used in current economic theory appears close to what Hayek (1945) meant by explicit

knowledge, which consists of little bits of data and objective facts that can be gathered and transmitted among individuals. ETK, however, dwells on tacit or subjective knowledge which is different from explicit knowledge that Hayek (1945) focuses on (see Section 4.5). As understood in the study, ETK focuses on economic information for production and not information for contractual arrangements or transactions in markets as treated under information economics. The novelty of this study, therefore, is using ETK as a theoretical perspective to solve a problem of information asymmetry which arises under contractual arrangements or transactions in urban real estate markets.

Fundamental insights drawn from a review of ETK for this study, shows that the theory has support for its propositions in other works of Hayek (1937, 1944, 1948, 1960 and 1978), albeit this study practically cannot exhaust the entire work associated with the author. This is, however, not a weakness on the part of the theory but rather makes it useful theory all time round. Support for this opinion comes from focal literature such as Butos (2003) that there is flexibility in ETK and this makes it more useful in enabling in-depth explanations of some of the themes in the theory in other works of Hayek. Beaulier *et al.* (2005) aptly observe that one can always find an overlap between key themes in ETK and other works and theories of Hayek in economics, law, and politics. (Caldwell, 2011) contributes that the work of Hayek (1945) is integrative and multidisciplinary. Hence, this appears to make ETK robust rather than an incoherent theory to use.

Nevertheless, ETK has received criticism in recent times concerning the function of the price system in liberalised economies. Bronk (2013, p. 104), while admitting that *Hayek's analysis of the problems of knowledge remains peerless*, critiques the theory that the global financial crisis that occurred late 2008 after a long period of the price system giving very misleading signals, represents a key example of how ETK is

incomplete. In view of this, Bronk (2013) argues that the theory needs a re-assessment based on lessons from the global crisis that:

1. Market power and wealth influences prices and, therefore prices may not reflect the true market picture;
2. Damage done to prices by market failures which includes the problem of externalities and information asymmetries; and
3. Pricing of non-standard products.

The, criticisms although necessary to draw attention to the need for further moves to monitor and sanction unethical behaviours in the market, one may argue that Bronk's (2013) criticism appears insufficient to undermine the foundations of ETK. Clearly, what is more worth noting about the criticism of Bronk (2013) might be the need for closer monitoring of market regulations and ensuring that they are complied with.

Finally, if the theory has any weakness at all, acknowledging it and making the relevant assumptions in support of it may sound reasonable. For example, the perfect market model which in spite of the various criticisms is still applicable in economics (Arrow and Debreu, 1954; Blaug, 2001). Similarly, "Transaction Cost Theory" by Coase (1960) despite its criticism of zero transaction cost remains a dominant theory and being used (Hammond, 2006). Furthermore, the "Efficient Market Theory" by Fama (1970) which is widely used for capital markets has received criticisms yet it remains the dominant theory in capital markets. Criticisms about ETK are, therefore, not an exception. However, as to whether the criticisms are valid or not, remain debatable of which this study finds any that fundamentally undermines the theory.

4.4 KNOWLEDGE AS A VITAL ECONOMIC RESOURCE

Hayek (1945, 1937) uses ETK to draw attention of society about "division of knowledge" with reference to a classic concept of "division of labour" by Smith

(1776) in economics. This reference relates to a thesis of Smith (1776) in the book “The Wealth of Nations” that division of labour among economic agents ultimately drives nations to a state of wealth that is judged by the amount of goods and services produced by the economy but not money and precious minerals like gold and silver that a nation has (Blaug, 2001; Rima, 2001; Nelson and Winter, 2002; Ashraf *et al.*, 2005; Chang, 2010; Butler, 2011). In view of this insight, Hayek (1945) alludes that division of knowledge equally bestows on society the advantages of division of labour such as enabling supply of goods and services in urgent demand at the least cost to society and also, contributes to economic growth of an economy (Vanberg, 1994; Weiber and Kollmann, 1998; Ștefanachi, 2011). Indeed, in modern time, calculation of a country’s Gross Domestic Product captures two elements of goods and service produced and consumed.

4.5 ECONOMIC KNOWLEDGE

Knowledge under consideration in ETK and also derived as the dependent variable and used in the theoretical model being developed is local knowledge, which according to Hayek (1945, p.521) is *knowledge of particular circumstances of time and place*. It is knowledge alternatively referred to as “unorganised knowledge”, “relevant knowledge”, “practical knowledge”, or “tacit knowledge”, which by its nature is fragmented, dispersed and practically inalienable from the individual who possesses it (Hayek, 1937; Hirshleifer, 1973; Butler, 1983; Zappia, 1996; Caldwell, 1997; Boettke, 2002; Dew *et al.*, 2004; Gamble, 2007; Oguz, 2010). Hayek (1945, pp. 521-522) explains it is knowledge that:

Practically every individual has some advantage over all others in that he possesses unique information of which beneficial use might

be made, but which use can be made only if the decisions depending on it are left to him or are made with his active cooperation.

The knowledge in question is “know how” which is the same as the knowledge Ryle (1949) describes as the ability to do things or act and distinct from “know that” which is knowing (Butler, 1983; Lundvall and Johnson, 1994; Oguz, 2010). This clear distinction of knowledge leads to the sharp contrast between knowledge possessed by economic agents and bureaucrats.

It is explicit that knowledge considered in the theory does not connote knowledge possessed by virtue of being a bureaucrat such as an expert land administrator, or a chief executive of a monopolised land administration or analogous public agency. This is because in ETK, Hayek (1945) suggests that the knowledge required for competition is not scientific knowledge, which is theoretical, objective, technical, expert, propositional, bookish or academic knowledge and also, it is knowledge based of facts and general rules in particular fields of study. Thus, Hayek (1945) suggests that socialism and monopoly depends on scientific knowledge, which is different from unorganised knowledge that is local and more utilised in competition. Ikeda (2004) concurs in this suggestion. Hence, whether removal of monopoly is likely to lead to utilisation of unorganised knowledge in competition for land information supply forms the subject of verification in this research.

Indeed, regarding how these can occur, Hayek (1948, p. 95) poses two questions for consideration as follows:

1. *What institutional arrangements are necessary in order that the unknown persons who have knowledge specially suited to a particular task are more likely to be attracted to that task?*

2. *What sort of knowledge it is that is supposed to be in possession of the parties of the market?*

These questions are used as “golden guidelines” to find responses to relevant research queries that are raised in Sections 4.6.1 to 4.6.4.

4.5.1 Utilisation of Knowledge and Theory of Competition

“Economic Theory of Competition” is one of the collections in the book “Individualism and Economic Order” both authored by Hayek (1948). This theory as mentioned earlier (see Section 4.3) overlaps with ETK and is found very useful at this point. This is relied on in deriving efficiency and effectiveness knowledge for reasons that it helps to bring on board both kinds of knowledge that enables one to have full complement of local knowledge for verification.

Also, it compliments ETK because it provides adequate ingredients about efficiency and effectiveness knowledge as follows. For example, Hayek (1948) points out that market competition involves use of existing knowledge and discovery of knowledge. Boettke (1989) and Snow (2002) reiterate this point. The discovery aspect of competition enables one producer to step in when another producer is not performing (Hayek, 1945 and 1948). Thus, it is from this perspective of producers of goods and service providers that Hayek (1948, p. 95) proposes that competition enables one to know the:

- i) lowest cost at which a commodity or service can be produced by sellers or service providers respectively; and
- ii) wishes and desires of customers including the kinds of goods and services they demand and prices they are willing to pay.

These statements above are respectively discussed under efficiency and effectiveness knowledge as follows.

4.6 COMPONENTS OF ECONOMIC KNOWLEDGE

Four components of local knowledge are derived from ETK. Each of the four components is shown in Figure 4.1 and discussed afterwards from Section 4.6.1 to Section 4.6.4.

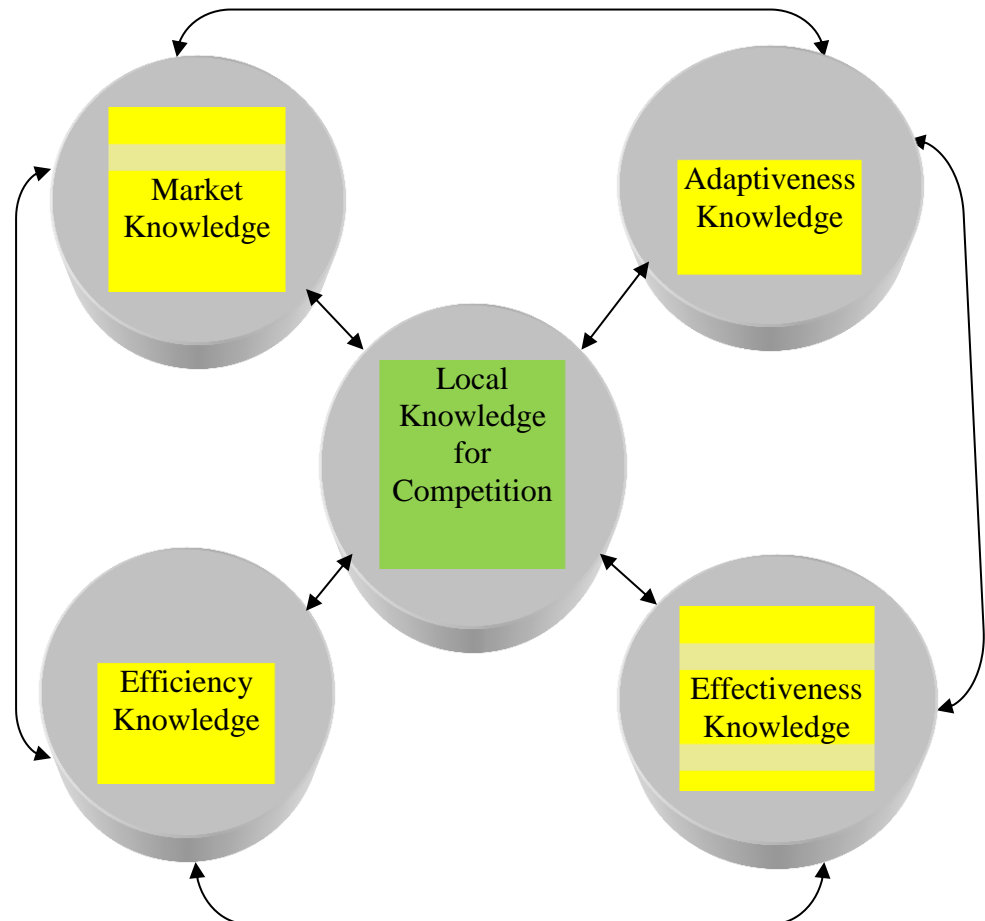


Figure 4. 1: Kinds of local knowledge required in competition

Source: Adapted from Weiber and Kollmann (1998).

The four components of knowledge in Figure 4.1 are derived based on knowledge required in competition which Hayek (1945, p.521) refers to as *knowledge of the particular circumstances of time and place*. Weiber and Kollmann (1998) and Ikeda (2004) describe this knowledge as generic, whereas Dew *et al.* (2004) opine it has broad interpretation. Indeed, Hayek (1945) explains the knowledge being considered in ETK with different examples and scenarios that depict the respective meanings shown in Figure 4.1. Insights gleaned from focal literature helped in firming up with labelling of

four kinds of knowledge derived from ETK as market, adaptiveness, effectiveness and efficiency knowledge (Weiber and Kollmann, 1998). These four kinds of knowledge are based on following components of local knowledge deduced from ETK:

- i) knowledge of particular circumstance of space;
- ii) knowledge of particular circumstances of time; and
- iii) combination of knowledge of space and time.

4.6.1 Market Knowledge

Knowledge of “particular circumstances of space” is derived as a kind of knowledge that refers to market knowledge because it relates to geographical location, coverage or specific economic activity in context. Hayek (1945, p. 522) first, discloses this with the statement *we need to remember how valuable an asset in all walks of life is knowledge of people, of local conditions, and special circumstances* which practically every individual has an advantage over all others. Boettke (2007) confirms that knowledge economic agents used in orienting their actions is based on concrete knowledge of circumstances at particular times and places and as utilised in the market by entrepreneurs, it does not exist outside that local context and cannot even be organised in principle.

Hayek (1945, p. 522) illustrates with examples that knowledge of sub-optimally used production machine or knowledge of persons or knowledge of supplies during shortage is socially quite as useful as the knowledge of better alternative technique of production of goods (Ikeda, 2004). Hayek (1945) mentions the relevance of market knowledge uniquely possessed by individuals in particular markets using examples of the shipper, estate agent and the arbitrageur who for example *gains from local differences of commodity prices*. According to Hayek (1945) these individuals perform eminently useful functions based on special knowledge of circumstances of the fleeting moment not known to others. Puusa and Eerikänen (2010) contributes that mastery of the broad

picture in terms of knowing the market more broadly, personal and social networks, knowing the environment and being able to predict changes forms part of the tacit knowledge of individuals. This suggests that ingredients such as familiarity with local conditions and networks, type of goods and services in demand, and opportunities for satisfying the demands based on one's experience, skill and intuition are relevant market knowledge that are likely to play a role in competition.

In tandem with the above, knowledge individual economic agents possess based on experience, skill or intuition and familiarity with urban real estate markets environment, needs, demands and networks to harness information, is derived. Applying the golden guidelines of Hayek (1948) as conditions that can enable the price system to occur, the following research questions are posed:

- (i) Do we have individual economic agents who possess the relevant market knowledge? and
- (ii) Is it likely that these agents will use their knowledge in competition to deliver effective land information services when a policy that deregulates monopoly is introduced?

The relevant answers to these questions are provided in Chapter Nine.

4.6.2 Adaptive Knowledge

Adaptive knowledge which may also be linked to price formation in competitive markets in context refers to knowledge of “particular circumstances of time” and relates to economic agents' flexibility in taking decisions and actions to respond to changing needs in society in the short run (Weiber and Kollmann, 1998). Thus, adaptive knowledge in context refers to knowledge of how to flexibly and speedily take decisions and actions in response to changes in needs and wants of buyers as well as market conditions (Kahn and Myers, 2005). Yeager (1994) explains that adaptation implies the

individual knows of the conditions in the market for inputs and for consumer goods and services both present and presumably future trend based on past events.

In terms of ETK, Hayek (1945, p.523) argues that *it is worth stressing that economic problems arise always and only in consequence of change* and the frequency of relevant changes calls for substantial alteration of production plans, which are necessary when the man on the spot can better respond to the changes with his knowledge. Thus, in relation to flexibility of responding promptly to changes in a market environment, Hayek (1945, p.524) proposes that *the ultimate decisions must be left to the people who are familiar with these circumstances, who know directly of the relevant changes and of the resources immediately available to meet them*. As applicable to this study, Hayek (1945) provides a lead argument that socialism and by extension entrenched monopolised state agency cannot rapidly adapt to changes arising in a particular local environment.

According to Hayek (1945, p. 525) this is because local knowledge is dynamic and competition solves the problem of rapid adaptation provided that decisions are left to the *man on the spot* who often knows *how much more or less urgently wanted are the alternative things he produces or uses* and also promptly adjust to new events without having to be commanded or directed by any central authority (Butler, 1983). Recalling the shipper, estate agent, and the arbitrageur examples earlier mentioned, one can intuitively argue that they all operate in rapidly changing markets and easily adapt to changes in the market. This is because they know the environment and can predict changes (Puusa and Eerikäinen, 2010). Thus, it is instructive from the above to derive adaptive knowledge as knowledge contingent on market knowledge with specific ingredients such as knowledge of resources to use, networks, know-how and supply

sources of products urgently demanded in a market. Applying the golden guidelines, research questions emerging are:

- (i) Do we have individual economic agents who possess relevant adaptive knowledge?
- (ii) What is the likelihood that these agents will use this knowledge in competition to harness information when a policy that deregulates monopoly is introduced?

These questions are also appropriately addressed in Chapter Nine.

4.6.3 Efficiency Knowledge

Efficiency knowledge which may also be linked to price formation in competition in this context refers to cost saving technique knowledge that an individual economic agent possesses about using resources including market and adaptive knowledge for competition to harness information on lands and properties (see McAdam and Saulters, 2000). The element of cost saving technique is crucial within this knowledge because Hayek (1948) emphasises that market competition involves the use of existing knowledge and discovery of knowledge that enables the lowest cost at which a commodity or service can be produced or provided respectively. Hayek (1945) indeed hints some knowledge of resources such as sub-optimally used machine, other people's skill that could be better utilised, and sources of supply to draw on in times of scarcity are forms of efficient resource use. Beaulier *et al.* (2005) support with examples that in the competitive market, individuals allocate their time, labour, and capital based on local knowledge available to them.

Ideally, Hayek (1948, p. 95) intimates that an attempt at discovering new ways of doing things hinges mainly on discovery of facts about producers or sellers in the market who have knowledge about the *lowest cost at which the commodity can be produced*. Discovering this aspect of knowledge is very important because different people may

know different things (Birner and Zijp, 1994; Vaughan, 1999; Dew *et al.*, 2004) and self-interest prompts individuals to use their knowledge to find the most economical method of production. In line with these explanations, efficiency knowledge is derived as a variable.

Possession of efficiency knowledge used “in competition” but not “for competition”, may be considered as knowledge based on economic agents experience, skill and/or know how. Know how, according to Jensen *et al.* (2007), is acquired through experience and it is what characterises a skilled entrepreneur or investor and also distinguishes the first rate investor from the average manager and investor. Thus economic agents’ tendency to compete in harnessing information on landed properties in urban real estate markets depends on possession of efficiency knowledge such as:

- a. knowledge of alternative economic techniques to use; and
- b. knowledge of how to use alternative resources to operate better systems than others;

In effect, one may draw an inference that efficiency knowledge relates to how individual economic agents skilfully will use their market and adaptive knowledge to harness information on land and properties at least cost. Applying the two golden guidelines, the following questions are posed for verification in this study:

- (i) Are there economic agents who possess relevant efficiency knowledge?
- (ii) What is the likelihood that this knowledge will be used in competition if a policy that deregulates monopoly is implemented?

Chapter Nine provides the relevant answers to these questions.

4.6.4 Effectiveness Knowledge

Price formation in competition may also depend on effectiveness knowledge which in this study means knowledge that individuals possess to harness landed property information that meet information required in urban real estate markets (McAdam and Saulters, 2000). In competition, Hayek (1948) hints that discovery of various taste and preferences which individuals in the market have is essential (Butler, 1983; Weiber and Kollmann, 1998). This is because wishes and desires of consumers ought to be taken as a problem to be solved by the process of competition (Hayek, 1948). Hayek (1948) suggests the problem includes first, knowing kinds of goods and services that buyers demand and second, the prices they are willing to pay. Solving the problem in Hayek's (1948) opinion requires market activities such as advertising, price undercutting, and improving or differentiating the goods and services produced. Thus, effectiveness knowledge may be summarised as the tendency of an economic agent to be innovative in areas such as creating public awareness, keeping cost of service delivery low, improving land information and service delivery. Applying the two golden guidelines that are necessary for the price system to occur, the following questions are posed and appropriate addressed in Chapter Nine. These are:

- i) Are there economic agents with relevant effectiveness knowledge?
- ii) What is the likelihood that this knowledge will be used for competition if a policy that deregulates monopoly is implemented?

4.7 COMPETITION FROM A PERSPECTIVE OF CONSUMERS

Intuitively, the demand side of competition is also crucial for reasons that first, buyers or end users of goods and services have taste and preferences backed by willingness and ability to pay. Secondly, potential sellers of goods and services in possession of the relevant knowledge naturally may respond to market taste and preferences all things

being equal. From this viewpoint, Hayek (1948, p. 95) proposes that competition will enable customers and buyers to know of alternatives before them and who will serve them best. With respect to this, Hayek (1948, p.97) declares that the function of competition in the real world is precisely to teach us:

which grocer or travel agency, which department store or hotel, which doctor or solicitor, we can expect to provide the most satisfactory solution for whatever particular personal problem we may have to face.

Hayek (1948), therefore, proposes that the process of competition must solve problems of the wishes and desires of the consumers, including the kinds of goods and services, which they demand and the prices they are willing to pay. Furthermore, Hayek (1948) intimates that for buyers to have knowledge of alternatives before them, it depends on what happens on the market through activities such as advertising, price undercutting, and improvement in the goods and services produced.

Thus, on the whole, it is instructive for one to draw inferences from preceding discussions to ascertain land information required to overcome information asymmetry in UREMs as follows:

- i) What kind of information does society require to overcome information asymmetry?
- ii) Can competition enable relevant information required to be supplied?
- iii) Can competition ensure least cost of access to information required in the market?
- iv) Can competition satisfy various taste and preferences in the market?
- v) What is the degree of willingness of society to pay for information under competition if it meets expected preferences?

All things being equal, it is anticipated that responses to these theoretical questions in this thesis can serve as a means of verifying public perception about benefits of competition, whether potential suppliers indeed have market knowledge, and its policy implications.

4.8 COMPETITION IN MODIFIED ETK FRAMEWORK

Hayek (1945) apart from propounding ETK is generally described as a theory builder, a critic of the fundamental basis of other theories, and does not seek to collect facts about modern societies to test theories (Desai, 1994; Stiglitz, 2000; Gamble, 2007). ETK is not an exception to this observation (Gamble, 2007). More so, Hayek (1952) explains the problem and mistakes which arise when economists attempt to use methods of the physical sciences in models in social sciences. Butler (1983, p.10) reiterates that in the opinion of Hayek (1952), *we might be able to talk about some general pattern of society, we should never suppose that we can completely predict it*. In brief, Hayek (1952) is not against the likelihood of pattern predictions but rather exactness of a prediction.

Considering the ensuing discussion on the limitation of non-mathematical approach in ETK, first it can be argued that such limitation is not a new phenomenon with influential theories, and second, a pattern predictive model can be formulated. For example, transaction cost theory by Coase (1937) was not fully developed for operationalization at the onset until Williamson (1973 and 1975) first operationalised the theory and subjected it to empirical test (Williamson, 2002; Geyskens *et al.*, 2006). Similarly, Public Choice theorist did not model the behaviour of bureaucracies until Niskanen (1971, 1994) studied the problem of bureaucracy from economic point of view asserting incentives and constraints as contributory factors to the differences in the

behaviour of bureaucrats and privately owned enterprise managers (Žarković-Rakić, 2007; Simandan, 2009).

From these examples, it may be argued that there are pristine precedents which suggest ETK can also be formulated into a framework and the relevant statistical tool applied for verification of the theory. Thus, based on variables derived from ETK and insights culled from microeconomics demand and supply theory, multinomial logistic regression model is used as it analyses pattern prediction of a policy that seeks to deregulate monopoly and introduce competition for fuller utilisation of knowledge that economic agents possess.

4.9 THE THEORETICAL FRAMEWORK

A theoretical framework teased from ETK shows a summary of the theoretical focus of the study from both supply and demand sides of land information in UREMs. Like ETK, the framework depicts a possible link between a change from monopoly in land information supply to competition, which utilises four kinds of practical knowledge in supply of goods and services. Hence, the four predictors in the framework are:

- (i) Market Knowledge (M);
- (ii) Adaptiveness Knowledge (A);
- (iii) Efficiency Knowledge (I); and
- (iv) Effectiveness Knowledge (E).

Figure 4.2 shows the theoretical framework developed from ETK as follows.

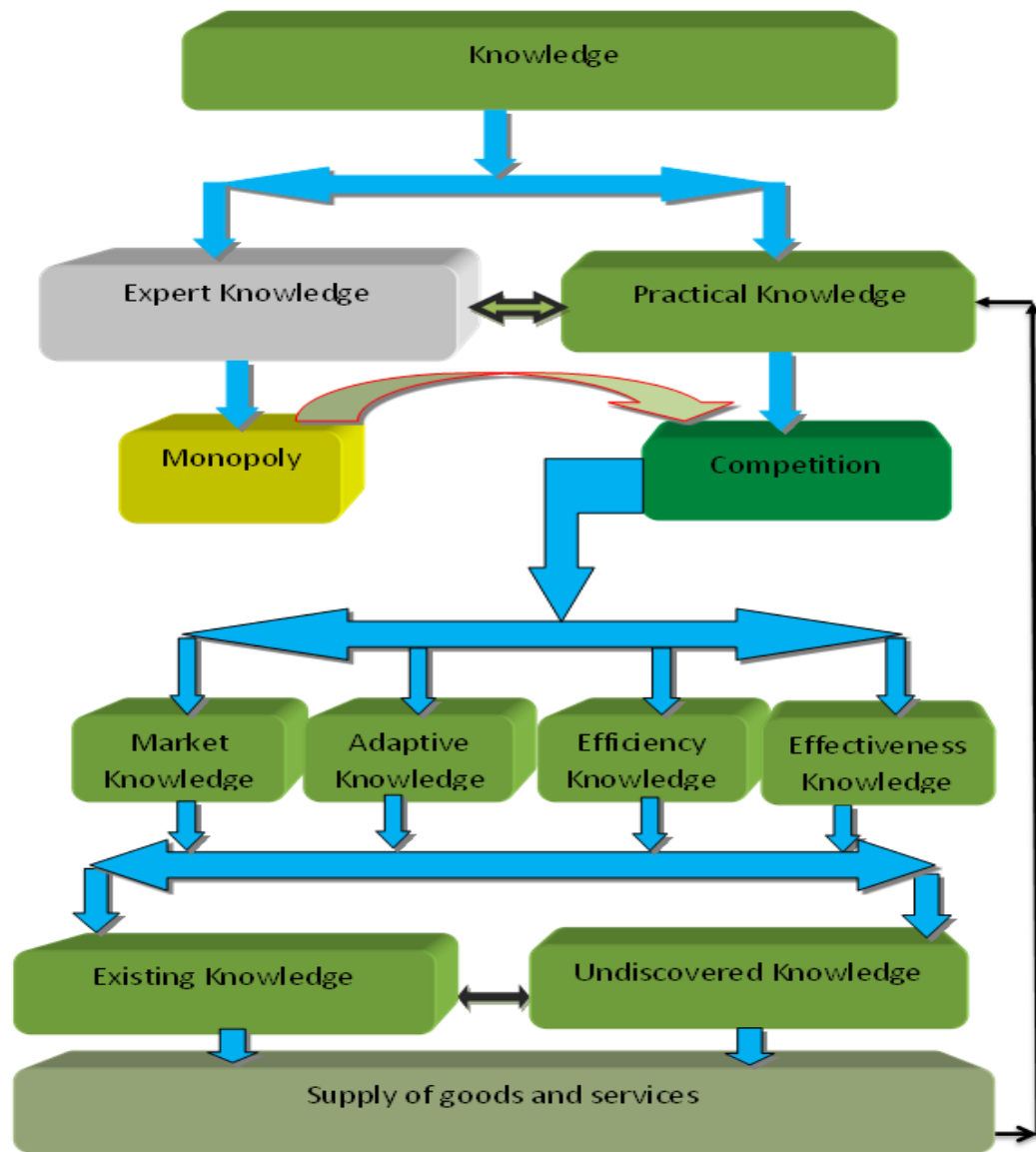


Figure 4. 2: Theoretical framework of kinds of knowledge that drives competition

To predict relationship between effective competition and the four kinds of knowledge as predictor variables, relevant hypothesis is developed for a likelihood relationship between competition and the predictor variables. All things being equal, the framework shown above is subjected to testing on the hypothesis below:

There is likelihood that a policy that deregulates monopoly over harnessing of land information enables use of practical knowledge possessed by individual economic agents in competition for delivery of efficient land information services in urban real estate markets.

From a perspective of supply, the research focuses on verifying whether there is a relationship between competition and utilisation of practical knowledge possessed by individual economic actors. On the demand side, the research focuses on whether competition can promote healthy flow and broad based access to land information by the participants in UREMs. The anticipated outcome from both demand and supply sides of the study leads to the development of a land information management framework (Chapters and 10). Meanwhile, succeeding discussions highlights what is anticipated from ETK in UREMs. Figure 4.3 shows a hypothetical demand and supply for land information under the monopolised land information supply regime and how one would expect an intervention to impact on demand and supply of an improved LIS.

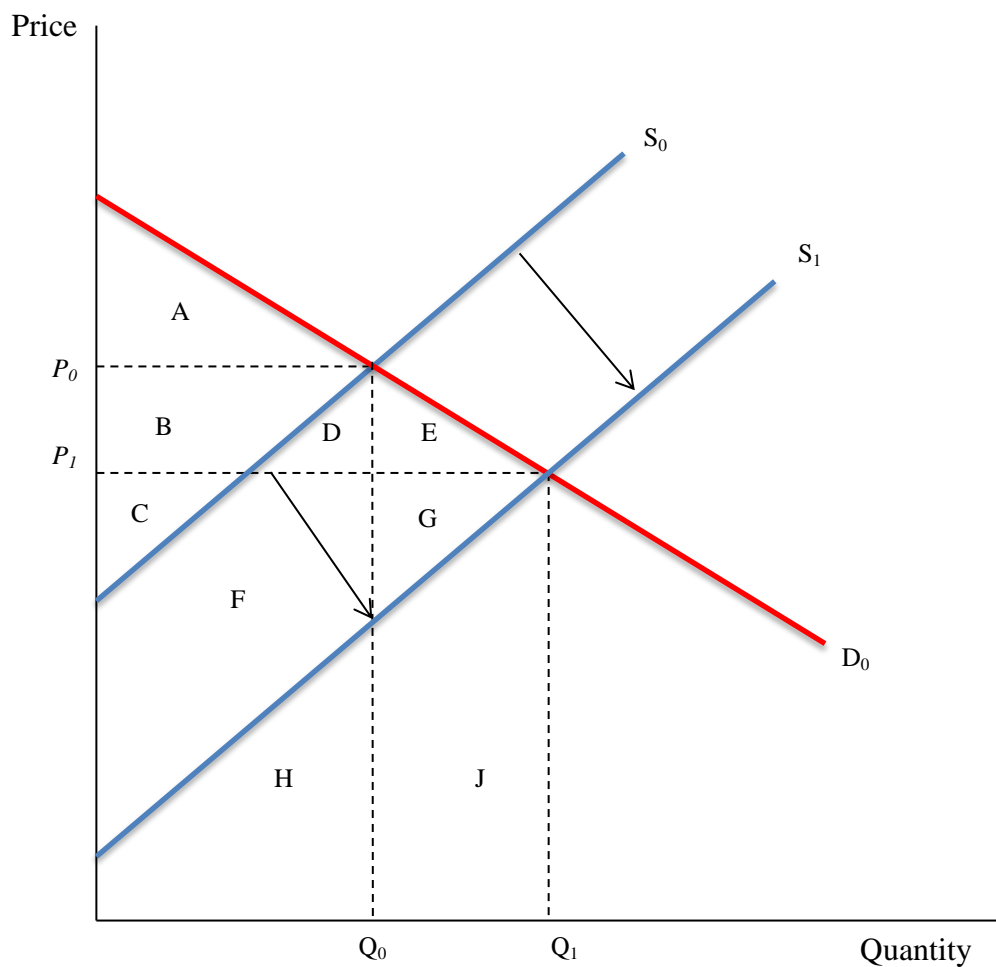


Figure 4. 3: Consumer and Producer Surpluses of Land Information Systems

Source: Poe *et al.* (1992) and Zerbe and Dively (1994).

The illustration in Figure 4.3 follows an approach similar to a theoretical approach that can be used for analysing an intervention. Thus, the quantity axis indicates demand for land information, which is a derived demand for urban real estate activities (Poe *et al.*, 1992; Hammond and Antwi, 2010). The price axis measures the marginal benefits and costs of additional improvements of information quality which can be expressed in monetary units (Poe *et al.*, 1992; Zerbe and Dively, 1994).

The demand curve D_0 represents the aggregate demand, shows approximately the vertical summation of individual bid or valuation curves for incremental improvements in information quality, and the marginal benefits or maximum willingness-to-pay curve by consumers (Poe *et al.*, 1992; Zerbe and Dively, 1994). Under the prevailing monopoly regime, land information being produced assumes a market demand schedule sloping downward, which implies that a registry can sell an additional unit of output only by reducing price on every unit it sells (Boardman *et al.*, 2006) over a period of time. However, since under monopoly of state-owned bureaus, price is fixed and the market determines the quantity to buy, there is failure to achieve this. ETK therefore, suggests that competition among entrepreneurs for supply of improved land information can enable supply of information at reduced cost than the supply curve S_0 under monopoly.

From a hypothetical perspective, the supply curve S_0 which is upward sloping has two major implications in the context of this study. First, it represents the opportunity cost associated with various levels of land information output or service delivery and includes also, a unit transaction cost associated with each unit of landed property purchased or decision made based on the information (Poe *et al.*, 1992; Zerbe and Dively, 1994; Dale, 1997). Alternatively, it is arguable this cost may include cost of reducing uncertainty in transacting in urban real estate markets. For example, the cost

may primarily consist of costs of ascertaining landed property ownership, obtaining relevant prices and available stock, measuring and monitoring the relevant attributes of real estate, negotiating terms of trade, and formalizing and enforcement of real estate contracts (Dahlman, 1979; de Soto, 2000; Hammond, 2006b; Hammond and Antwi, 2010). All these require reliable information to ensure certainty in navigating through urban real estate markets possibly in an efficient and effective manner.

Secondly, the upward-sloping supply curve indicates that the producer has an opportunity to adjust output in response to anticipated demand for additional information (Hayami and Peterson, 1972). However, since both demand and supply curves for information in Figure 4.3 above have no specific supply functions that determine the quantity and so they represent estimates for marginal benefits and costs for specific levels of quality information (Poe *et al.*, 1992). This can be argued, presents an opportunity for a responsive supplier, which it appears, it is either ignored or not recognised or discovered by a monopolist unlike under competition where entrepreneurs are striving to exploit such opportunities. Hence, the triangle consisting of areas *A*, *B*, and *C* in Figure 4.3 constitute a region of consumer and producer surpluses which generates and contributes negative effects on welfare of society (Harberger, 1954). These, therefore, provides basis for deregulation. Thus, the challenge is what method can enable the demand curve to shift to the right. Is it by expert knowledge or economic knowledge possessed by individual economic actors? This research focuses on verifying whether competition is likely to thrive on economic knowledge to let this happen in an UREM context.

4.10 RELEVANCE OF ETK IN LAND ADMINISTRATION

The relevance of ETK to land administration cannot be underestimated. This is because whereas theoretical basis of land administration and UREMs appear deficient in use and

application of ETK, this is not the case with land use planning and land use market. For example, in land use planning and market, ETK is known to have been applied since the 1980s to challenge a long-held practice in the UK as in many other countries that traditional public sector town planning agencies were exclusively in charge of handling land use planning (Lai, 2004; Pennington, 2004; Webster, 2006). In the UK, Webster (2006) mentions application of the theory to address issues such as:

- (a) What land use planning was supposed to deliver;
- (b) What it was delivering;
- (c) What it was not delivering; and
- (d) What society and the economy might want it to deliver.

Indeed, response to these resulted in changes to regulations that govern conversion of one land use to another, and emergence of quasi-public agency possessing strong financial and land assembly powers serving as a point for lodging development rights, albeit there is room for more improvement (Webster, 2006). Although the UK experience might not be a success story to tell, it is a pristine example that ETK has been used in an allied subject area and its application to land administration and real estate market within a different context might contribute further to theoretical and empirical knowledge.

4.11 COMPETITION IN LAND INFORMATION SUPPLY

Form theoretical point of view, competition in land information supply in UREMs appears long overdue. This may be better appreciated if weakness in central planning and monopoly systems are recalled. First, the argument by Hayek (1937, 1944 and 1945) that central planning system is a mistake because it is an ineffective way to coordinate prices and production since it does not take account of dispersed local

knowledge which can never be centralised in bureaus for utilisation is now vindicated (Moss, 1991; Keizer, 1994; Caldwell, 1997; Macedo, 1999; Webster, 2006). Hence, in a central planning system, economic knowledge gets lost and prices contain less information to signal for decision making (Hayek 1937, 1945; Caldwell, 1997). A key lesson from this fundamental argument of Hayek (1945) is that the collective wisdom of individual economic actors in a market is superior to the judgements of experts at the central planning board or state bureaus (Keizer, 1994; Hoppe, 1994; Macedo, 1999; Boettke, 2002; Webster, 2006; Heath, 2007; Nadeau, 2012; Bronk, 2013).

Beyond the theoretical argument, focal literature concurs that under market socialism in the former Soviet Union, managers of socialist firms like their counterparts in bureaucratic organisations in modern time were inefficient in the absence of competition (Bradley, 1981; Keizer, 1994; Caldwell, 1997). Keizer (1994) specifically reports some practices of central planning authorities and enterprise managers as follows:

- a) understatement of production capacities and overstatement of input requirements;
- b) managers and bureaucrats pursuing their own objectives;
- c) low productivity for the economy; and
- d) waste of resources and capital.

Indeed, these are also features of bureaucrats identified in empirical studies from rent seeking and transaction cost theory perspectives by Antwi (2000) and Hammond (2006), respectively.

Second, focusing on monopoly, Hayek (1945, 1948 and 1976) differentiates between two broad category of monopolies namely monopoly that arises by economic superiority and by policy (Guest, 1997). The former as enterprise monopoly is

temporarily good if doing what the market does best and will give way for competition among private individuals when the need arises (Hayek, 1945; Guest, 1997). Posner (1975) concurs that it is tolerable because a monopoly that cuts cost or prices or is innovative will normally yield social benefits greater than the expenditures on monopolising.

Contrarily, Hayek (1945 and 1976) posits that a monopoly by policy, which is an entrenched monopoly maintained as barrier to entry and prohibits competition, like central planning, is equally inefficient in enabling utilisation of economic knowledge in society and such policy must be removed (Guest, 1997). This is because monopoly of this nature can be damaging for reasons that prices charged for products or services may not correspond to marginal cost of production and therefore, costs are likely to be much higher than necessary, worse off, and the monopolist may deliver poor quality service at inflated price (Desai, 1994; Caldwell, 1997). There is real evidence of these in UREMs (See Chapter 9).

Hayek (1945) uniquely highlights the deficiencies of monopoly from a theoretical perspective of degree of knowledge utilisation. Notwithstanding this, economists such as Coase (1960), Posner (1975), Wolf (1970) and Niskanen (1994) among others from various backgrounds and theoretical perspectives express a convergent viewpoint about these attributes of monopoly by government policy. Posner (1975) following the Transaction Cost tradition of Coase (1960) for example, sums up all the negative attributes of entrenched monopoly as a social cost, which imposes deadweight on society. Hence, ETK provides clues regarding vices of socialism and specifically monopoly as economic systems where propensity for knowledge utilisation appears neglected.

As an alternative to monopoly, one may argue that the introduction of competition for the supply of land information is long overdue. This is because it is within a competitive market system that the function and informational efficiency of the price system can be appreciated better than the prevailing monopoly (Hayek, 1945; Boettke, 2002). Again, competition is needed because it is a dynamic process through which new knowledge and opportunities are likely to be discovered to complement the price system (Birner, 2002). Furthermore, it is most likely that within a competitive land information supply market environment that free market prices will be communicated to economic actors about what should be accomplished in the market and not how much (Snow, 2002). More so, it is within the competitive system that market prices are bound to condense concrete information into an abstract and flexible form for individual land information suppliers to use (Boykin, 2010). Regarding how these can be promoted in the context of UREMs, a conceptual framework is developed and discussed in the next chapter.

4.12 SUMMARY OF CHAPTER

The chapter reviews ETK by Hayek (1945) to explore the concept of knowledge for verifying whether it might be useful for analysis of introduction of competition in supply of land information in urban real estate markets. The theory suggests that monopoly unlike competition is a bottleneck to smooth functioning of the price system in markets and proposes that where unprofitable monopolist exists, it should be removed and replaced with competition as an economic system that taps on more on local knowledge and utilises it more.

Impliedly, because monopoly is less efficient in tapping on and in utilisation of local knowledge for harnessing of land information, it is likely to be the principal cause of the unhealthy flow of land information. Its external effect is information asymmetry in urban real estate markets. To enable the smooth flow of land information, ETK suggests

that introduction of competition is likely to result in cost-effective supply of land information based on local knowledge possessed by many economic actors for harnessing land information effectively. A theoretical framework that underpins this study is, therefore, formulated with competition as the dependent variable and four kinds of knowledge; market, adaptive, efficiency, and effectiveness knowledge as independent variables. The next chapter focuses on conceptualising these variables.

CHAPTER FIVE**DEVELOPMENT OF A CONCEPTUAL FRAMEWORK FOR LAND INFORMATION MANAGEMENT****5.0 INTRODUCTION**

This chapter develops a Knowledge Utilisation Conceptual Framework as an attempt to operationalize ETK by Hayek (1945) in the context of UREMs where land information supply is monopolised by public sector land administration agencies. The chapter is based on insights gleaned from ETK and conceptualises two main themes namely competition and practical knowledge. These concepts are discussed in relation to how the price system can be allowed to work to help bring about supply of reliable land information on one hand and wide access and use improved land on the other hand in urban real estate markets. The chapter ends with a framework that links knowledge and competition as well as the likely outcome of competition. It is the final framework that was tested in the field.

5.1 ETK IN CONTEXT

A Knowledge Utilisation Conceptual Framework is developed based on concepts from ETK (Hayek, 1945). This framework provides basis for testing the likely impact of a policy of deregulation on use of entrepreneurial knowledge possessed by individual economic actors for competition in supply of land information. The framework is used in operationalising competition and entrepreneurial knowledge as dependent and independent variables respectively as derived from ETK. Also, the framework builds the relationship for testing propositions that dynamic competition in land information supply depends on degree of utilisation of four kinds of knowledge namely; market knowledge, adaptive knowledge, efficiency knowledge, and effectiveness knowledge possessed by entrepreneurs. Relevant components of these four kinds of knowledge are

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derived in the context of real estate markets from practical sources and proxies. Finally, both dependent and independent variables are operationalised within the contest of testing the theory to verify whether:

Public service land administration bureaus are not different from private sector entities in harnessing land information in urban real estate markets.

Land information under consideration refers to information on landed properties, which includes bare lands, residential and commercial properties as well as agricultural lands. In broad context, the framework is applicable to land administration of which LIS is not only a component but the bedrock of a successful land administration set up and urban real estate markets. The land administration set up by conventional practice usually includes three core service delivery activities. These include land surveying, which involves data capture of physical boundaries of landed properties, registration of ownership interests and rights based on the boundary captured, and valuation of registered landed properties for both fiscal and legal purposes.

The service delivery activities mentioned above are also by conventional practice controlled by state-owned land administration agencies and managed by bureaucrats (see Chapters 2 and 3). Furthermore, by standard practice, the operations of the agencies in the three core service delivery activities of surveying, registration, and valuation of land and properties involves four key stages namely data capture, processing, storage, and retrieval of information for dissemination to end users. This set of key stages constitutes a land information system and it is within this context that a land information system forms the bedrock of land administration.

Land administration in the context of this framework focuses on a one-stop-shop land information system. This focus extends beyond the usual practice in many developing countries by considering a fourth dimension, which is data acquisition on market events,

in addition to the traditional land surveying, registration, and valuation activities as part of an improved land information systems to tackle the problem of information asymmetry in urban real estate markets. The land information system under consideration, therefore, is an integrated system with seamless information consistently gathered and maintained by competing suppliers on physical attributes, legal attributes, land use attributes, land value attributes, and market intelligence information. It is land information system built on the principle of one-stop-shop so that same information can be widely accessed and used by market dealers and participants through blocking of existing gaps in information harnessing between land surveying, registration and valuation and real estate markets that exists under current monopolised regime. Figure 5.1 shows the envisaged improved land information system.

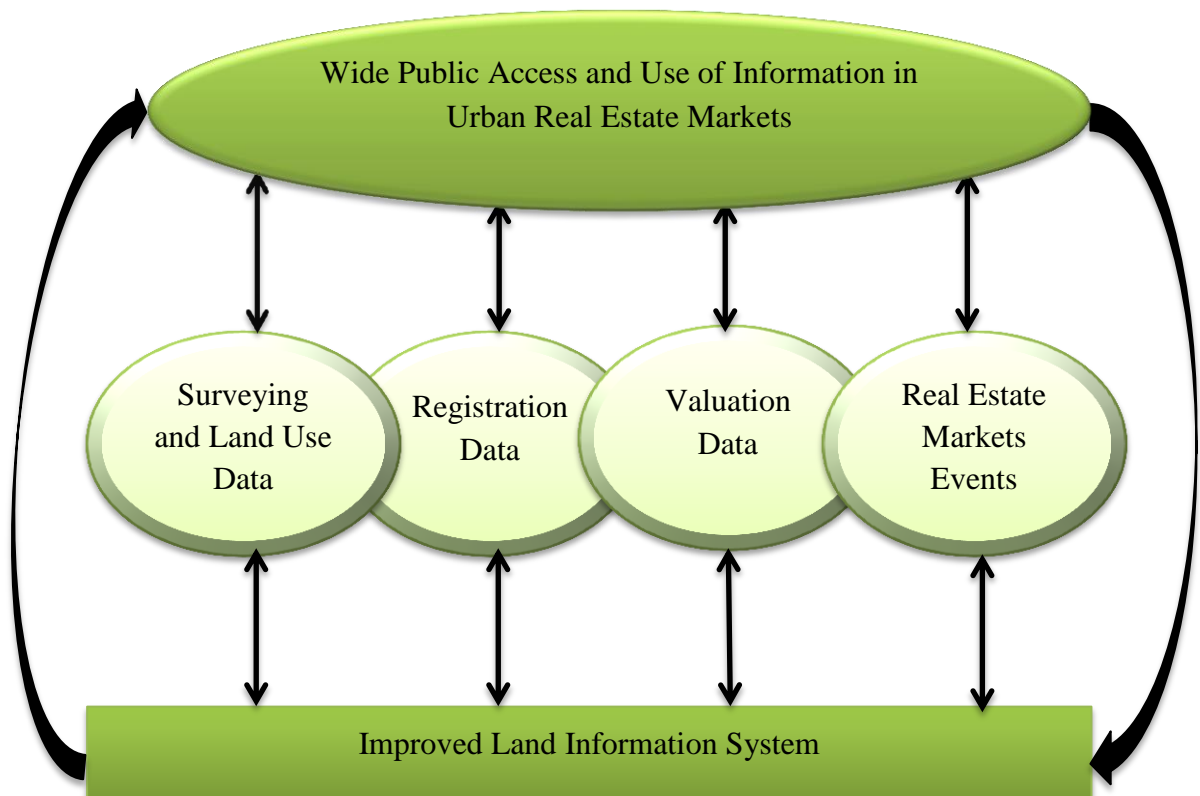


Figure 5.1: One-stop-shop land information systems

It is worthy to clarify that land information system in context, does not necessary imply the exclusive use of computers or does a computer systems alone comprise a land information system as often perceived (Nichols, 1993). This is notwithstanding that

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introduction of computers and other software and technology have reformed the speed and volume of land information collection, processing, storage, and dissemination (Nichols, 1993; Dale and McLaughlin, 1999; World Bank, 2011). The World Bank (2011) reveals that computerisation does not necessarily ensure efficiency when information stored is inaccurate. Thus, the framework focuses on two key issues. First, how land information across the traditional three core areas of land administration in addition to market intelligence information can be harnessed to form the bedrock of an improved land information system and second, how the information can be widely accessed and used in urban real estate markets to help bring information symmetry among market participants.

Considering that under the current regime of monopoly, data that is captured at the surveying level for instance may not go through the registration to valuation stages to complete the chain as captured in the information system, the effect is that there are always gaps in the system and various interventions to improve the system has yielded insignificant results (Zevenbergen, 2002; Hammond, 2008). This framework, therefore, provides the direction for investigating whether competition as an alternative method is likely to deliver an improved land information supply service in UREMs whereby data captured at any point in time is promptly harnessed and widely accessed by the public upon demand.

5.2 DEREGULATION OF LAND ADMINISTRATION SERVICES

Deregulation of public service land administration bureaus' monopoly to pave way for competition among entrepreneurs in supply of land information in UREMs appears is contingent on ascertaining whether there is division of land administration knowledge or not. The distinction contemplated is expert land administration knowledge and entrepreneurial land administration knowledge. The former refers to academic and

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technical knowledge possessed by professional land administrators, bureaucrats and public servants whereas the latter refers to knowledge possessed by private individuals who are entrepreneurs with some market based experience over real estate sector events. As proposed by Hayek (1945) and in line with the objective of this framework, focus is on the entrepreneurial knowledge, which is associated with competition, rather than the technical knowledge which is associated with monopoly as Figure 5.2 shown later depicts.

An entrepreneur in context therefore, refers to prospective land information supplier who has subjective skill, practical experience, know-how or intuition and capable of participating in competition in harnessing land information in urban real estate markets. In this context entrepreneurs' decision making is presumed to be influenced by familiarity with urban real estate markets, opportunities and how to tap into these in the market, and probably knowledge of technology and its potential applications to land information service delivery (Heath, 2007). The definition of who an entrepreneur in this context suffices for this study considering that definition for an entrepreneur remains one of the contestable definitions in focal literature. However, it is accepted that an entrepreneur has certain definitional features. In this study, entrepreneurs who have these definitional qualities can be identified from private real estate firms consisting of land surveying, valuation, and quantity surveying, law firms, real estate developers, real estate agency firms, banking and financial institutions, and relevant business firms.

These firms provide a practical source for potential entrepreneurs as elsewhere in the United States for example, Stanfield and Licht (2009) mentions that the Deeds Registry at Dane County, Wisconsin, receives over 70 per cent of its document recording load from private title insurance companies that also has registered access to land

information and compete for clients on the bases of services provided and price. Also, law firms, banks and lenders, realtors, appraisers, surveying and engineering firms, among others are major subscribers to the registry for access and use of information.

5.3 RATIONAL FOR DEREGULATION OF MONOPOLY

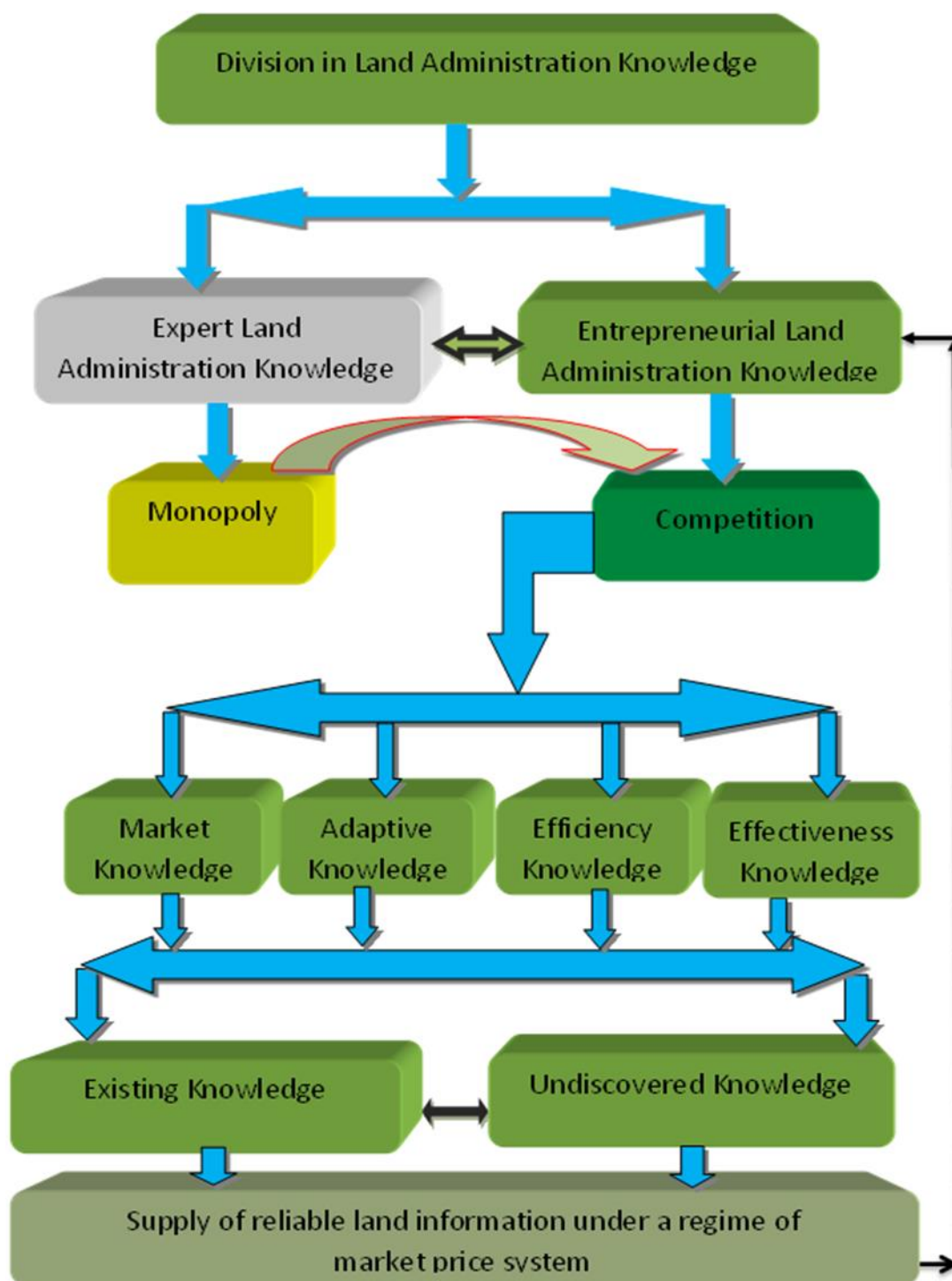


Figure 5.2: Conceptual framework of kinds of knowledge that can drive competition in UREM

Source: Developed based on ETK by Hayek (1945).

From Figure 5.2, entrepreneurs pursuing self-seeking profit motives through competition in UREMs are likely to enable market dealers have the benefit of wide access to and use of reliable land information, which in turn can enable information symmetry in the market. These benefits, however, are not forthcoming because of entrenched monopoly power possessed by state-owned land administration bureaus over supply of land information. Monopoly of this kind according to a proposition in ETK by Hayek (1945) is a barrier to utilisation of entrepreneurial knowledge and suggests that such barrier needs to be removed for competition, which complements the price system to work effectively in markets.

Competition envisaged in this framework means an opportunity for private sector entrepreneurs to utilise their practical knowledge to rival each other in harnessing information about landed property in real estate markets with the goal of building a one-stop-shop and a unified land information data base. Harnessing land information towards the goal of a common one-stop-shop land information system involves competition in the collection of landed property data, processing, storing, and retrieving as land information for dissemination to the public for decision making. Collection of landed property data in this context involves both obsession to attract more land information and systematic inventory of land and property through and during land surveying and drafting of relevant legal documents whereas processing and storing implies registration of landed property documents towards having complete national land registration coverage and reliable information data base.

Dissemination of land information in context refers to delivery of land information services to the public based on land information records jointly built and being used by all entrepreneurs through competition among entrepreneurs. Indeed Davies (2009, p.

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353) explains that *competition exists in economic situations whenever two or more actors seek to outperform one another, in pursuit of some commonly identified goal*. Thus, competition in the context of this study is competition in land information supply in relation to building and use of a central land information system as a pool.

Also, competition envisaged in land information service delivery is dynamic competition which is likely to ensure constant improvement in the quality and quantity of land information supplied and the mode of service delivery in accordance with the expectation of the public. What is expected is not static competition in a static market where the same product is reproduced over the years but, it is a kind of competition that will reward entrepreneurs who are innovative and striving to bridge whatever gap that emerges in the market (Hayek, 1945; Davies, 2009).

Furthermore, assuming that entry cost is not a barrier to competition, it is envisaged that deregulation may offer equal chance to all potential suppliers to start with their own knowledge to benchmark low cost of information service delivery. With time, however, it is expected both economies of scale and scope may be associated with competition in land information delivery service and use of entrepreneurial knowledge. This is because economies of scale may be achieved through dynamic competition that can drive cost down due to what Rena and Herani (2007) describe as accumulation of capital, acquisition of knowledge, efficiencies in production, and improvement in quality that can be gained from economies of scale. This is likely to mean that entrepreneurs who are able to expand their information user clientele base may have reduction in unit costs associated with providing large volumes of land information services to the public as it is with producing large volume of a products in other product markets (Moskowitz, 2009). Hence, economies of scale may arise as a result of producing in large volume so that the fixed cost involved in production can be distributed over a large number of final

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products. Also, it can be obtained in practice through increasing returns due to specialisation of labour or equipment (Moscowitz, 2009).

Following economies of scale, economies of scope is also likely to accrue to individual entrepreneurs all things being equal. In the context of economies of scope for land information supply, competitors involved in harnessing land information in terms of collection, processing, storage, and dissemination have the opportunity of specialising in market data gathering, land use and surveying, registration, and information dissemination as the key activities involved in land information delivery service. From a practical perspective, Sullivan (2009, p. 569) explains that economies of scope refer to the cost savings and efficiencies generated by the joint production or distribution of final goods and services. Sullivan (2009) elucidates that this arises when rather than specialising in a single product; a firm promotes its profitability and control some of its market risks by diversifying its product line to take advantage of inherent acquired economic, technical, and organisational advantages. This point invariably goes to buttress the need and goal for competition to build a common one-stop-shop land information system.

Also, from a perspective of demand, the nature of competition anticipated under a deregulated land information supply regime is that prospective land information suppliers' obsession to attract more land information users may lead to entrepreneurs employing the relevant entrepreneurial skills to satisfy the demands of land information users at reduced cost than other competitors. Under this kind of economic competition, one's expectation is that the ultimate goal of an entrepreneur is to gain continuous competitive advantage over other competitors so that in the long run non-competitive entrepreneurs may fall out of the land information delivery service while others too join.

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This is the reality of competition in product and service markets (Hayek, 1945, 1948; Rena and Herani, 2007).

Similarly, under a dynamic competitive system, the sale of reliable land information may enable more market participants to demand and make use of the information to enhance their decision makings on landed property acquisition and transactions (Dale, 1997). Such successful transactions over landed property acquisitions may trigger off the sale and purchases of other goods and services needed to furnish and refurbish the new homes (Dale, 1997). Dale (1997) further posits that both land and information about land is a resource that can be husbanded in order to achieve economic growth. This suggests land information can be sold at economic values and the proceeds used in maintaining the land information system. In total, to enable all the benefits considered in preceding discussions inure to users and suppliers of land information in UREMs, Hayek (1960) suggests that entrenched monopoly of state-owned organisations must be removed for efficient utilisation of knowledge in competition when it is expedient for government to do so.

5.4 EXPERT AND ENTREPRENEURIAL KNOWLEDGE

Knowledge as used in this conceptual framework refers to know-how that a prospective land information supplier exclusively possesses and likely to be used in harnessing land information better than other competitors in an urban real estate market. This know-how either relates or is applicable to land administration in terms of collection, processing, storage, retrieval, and dissemination of land information to the public in a more serviceable manner. The knowledge in this context is not merely “know-what”, “know-why”, “know-who”, but it is largely “know-how” as aptly identified and clarified by Lundvall and Johnson (1994).

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Lundvall and Johnson (1994) draw a distinction that know-what means knowledge about facts which is objective whereas know-why refers to principles and laws in human mind and society which for example in one way helps to advance technology. Know-who relates to information about who knows what to do and may also involve ability to cooperate with different kinds of people and experts. Finally, Lundvall and Johnson (1994) proffer that know-how refers to skills which is the ability to do something and this play a critical role in important economic activities. With the clarifications provided above, practical knowledge under consideration is the know-how that individual economic actors possess which can be utilised for profitable land information supply in UREMs.

5.5 STANDARDISATION OF LIS CONTENTS

Standards it is arguable virtually exist in every industry and for every ordered economic activity and economic product. Land information to be supplied under a one-stop-shop land information system should, therefore, not be an exception in order to serve as a benchmark for the kind of information that needs to be harnessed by competing land information suppliers. For example, the format of mobile telephone chips and banking cards, international freight containers, ISO codes for country names, currencies and languages, and paper sizes such as A4, A3, A2, and A4 among others are ubiquitous standards all over the world (Greenway, 2006). Basically, it is essential having standards because it may help reduce the scope of variability of product or service delivery.

With land information, there is a need for standardisation of what data needs to be collected, processed, stored and disseminated to land information users. With standards and specifications in place, land information users may have the opportunity to acquire information that is relevant to their needs and to know which supplier in the market is

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offering the best price and services. Also, standards are likely to enable suppliers offer differentiated land information in various forms to the public. Furthermore, having standards may enable buyers to know and be attracted to suppliers who are adhering to the standards. With competition, it is expected that suppliers who do not comply with standards are likely to be non-competitive and may loose out of competition.

Standardisation of land information system content is crucial because prices for sale of landed properties are believed to be characterised by implicit qualities which constitute a bundle of characteristics that may be factored into market prices. Hence, the price of landed properties is often assumed to be a function of the various observable and measurable characteristics (Lancaster, 1971; Ball, 1973; Rosen, 1974; Evans, 1997; Pope, 2008). Indeed, Antwi and Adams (2003) based on empirical studies suggest that landed property owners in UREMs in Ghana consider information about five key attributes of landed properties before fixing prices. These include market information, land tenure, land use, amenities and environmental information (Antwi and Adams, 2003).

Regarding buyers, creditors and other potential UREMs participants, Hammond (2008) makes a contextual suggestion, which implies these actors in the market require information about market events, land tenure, land use, public amenities and environmental conditions of landed properties. All these appear to be generic form of land information and also, appear to support the idea for standardisation of information contents of land information to be harnessed about landed property. Table 5.1, therefore, is constructed to build practical sources of relevant informational content that is considered and included in the field questionnaire for verification. Practical proxies derived from the table are used to form questions on all-in-one land information under the study.

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Table 5. 1: Some practical sources of real estate information indices

Author	Attributes of land and property that influences value	Nature of study	Comments
Grether and Mieszkowski (1974)	<ul style="list-style-type: none"> Size of the house How the house is divided for use Space of land included in the house Electrical and plumbing system Age and general condition of house Number of stories Existence of family or recreational area Availability of public services such as schools, water supply, sewers, police and Special and nonstandard features 	Regression analysis	These features are determinants of real estate value in the New Haven Metropolitan Area
Asebere (1981)	<ul style="list-style-type: none"> Location Zoning Tenure Site services and plot size 	Hedonic regression model	All factors influence land values in Accra
Gallimore, <i>et al.</i> (1996)	<ul style="list-style-type: none"> Neighbourhood amenities Exposure to adverse environmental factors Perceived value of neighbourhood security 	Theoretical discussion	High property values in area of good and high levels of amenities and low perceived levels of security risk
Dale (1997)	<p>Land information on the following are critical</p> <ul style="list-style-type: none"> Land tenure Land value and Land use 	Theoretical paper discussions	Traditional practice of land information management under different land agencies in uncoordinated manner
Evans (1997)	<ul style="list-style-type: none"> Search for availability of land and properties Search for prices of properties 	Theoretical paper discussions	Discussions on property market inefficiency compared to the stock market
Dale (1997)	<p>Government may exercise the right of eminent domain on land ownership as follows:</p> <ul style="list-style-type: none"> Land for road construction <p>Imposition of development controls for health and safety reasons on land ownership</p> <ul style="list-style-type: none"> Building regulations Environmental controls to ensure long-term sustainability Prevention of building in unstable areas What way may the land be used 	Theoretical paper discussions	Discussions on land tenure issues in the light of economic development
Dale (1997)	<ul style="list-style-type: none"> What legal liabilities exist for the quality and condition in the land What third party interests exist in the land or property 	Theoretical paper discussions	Land tenure issues in economic development
Owusu-Ansah (2012)	<ul style="list-style-type: none"> Number of rooms, floors Age of property Location of property Availability of garage fence wall Availability of swimming pool Land registration 	Hedonic pricing model used in urban residential market.	Locational, physical and amenities attributes are influential determinants of residential property values in Kumasi, Ghana

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Antwi (2002)	<ul style="list-style-type: none"> • Land sale prices 	Hedonic regression on land sale prices	Informal urban land sales in Accra, Ghana
Sivam, (2002)	Information required for efficient functioning of urban land markets <ul style="list-style-type: none"> • Land title • Land valuation • Land ownership and • Land use 	Theoretical paper discussions	Discussion in relation to urban residential land markets in developing countries with reference to India
Asabere (2004)	<ul style="list-style-type: none"> • Freehold interest and leasehold interest 	Hedonic regression analysis	Freehold interest sells at premium prices than leasehold interest in Accra, Ghana
Sirmans <i>et al.</i> (2005)	<ul style="list-style-type: none"> • House size • House type • Age of property • Garage • Number of rooms and bathrooms 	Hedonic pricing model in housing market.	Factors examined are influential determinants of residential property values
Oluyiwola <i>et al.</i> (2005)	<ul style="list-style-type: none"> • Accessibility • Transport improvement • Quality of neighbourhood • Infrastructural and facilities • Zoning 	Factor analysis and principal component analysis	All attributes are influential determinants of land value in Lagos, Nigeria
Grover (2009)	<ul style="list-style-type: none"> • Publication of property price data by land registration bodies • Publication of evidence of market prices by the Valuation Office Agency • Production of house price indexes by the HM Land Registry 	Theoretical paper discussions.	Discussions in relation to the UK
Bandeira <i>et al.</i> (2010)	Land information system must provide reliable information on: <ul style="list-style-type: none"> • Land ownership • Land value • Spatial location • Land use 	An empirical study	Evaluation of land administration in Peru and Honduras
Anim-Odame <i>et al.</i> (2010)	<ul style="list-style-type: none"> • Location • Security of tenure • Number of storeys, • Presence of garage • Detached outhouse • Good quality landscaping • Plot size 	Hedonic regression analysis	All factors influence land values and rent in Tema and Accra

5.6 KINDS OF KNOWLEDGE UTILISED IN COMPETITION

Four contextual possible types of entrepreneurial land administration knowledge derived as independent variables are considered in succeeding discussions. These are knowledge of local environment, knowledge of promptly responding to new demands in the market, knowledge of least cost to produce, and knowledge of satisfying demands in the market. It is expected that competition may depend on these four kinds of knowledge but the extent to which this is likely to eventuate is not yet known. Hence, each kind of knowledge is discussed in succeeding sections and also shown in the conceptual framework formulated and shown overleaf (see Figure 5.3).

Following discussions in Section 5.5, it suffices to expect that a reliable one-stop-shop land information system can be accessible for five key types of generic land information shown at the bottom in Figure 5.3. These are market information, tenure information, land use information, amenities information and environmental information. From both theoretical and practical perspectives, these types of generic land information are information gathered from surveying and land registration and other information on statistics, which of course in the context of this study is implied to be market data (Hayek, 1960; Dorn, 1981; Miller, 2010).

The UNECE (1996 and 2005), for example, provides one of the technical definitions that suggests land administration is about harnessing information on land tenure, land value, land use, and land development (Enemark, 2007; Williamson *et al.*, 2010; Tambuwala *et al.*, 2011). This standard has helped countries in transition from the Eastern European bloc to the European Union and offers a practical example that can be emulated for countries that do not yet have such land information system standard. Figure 5.3 shows the framework formulated for verification of ETK among various categories of respondents for their candid responses.

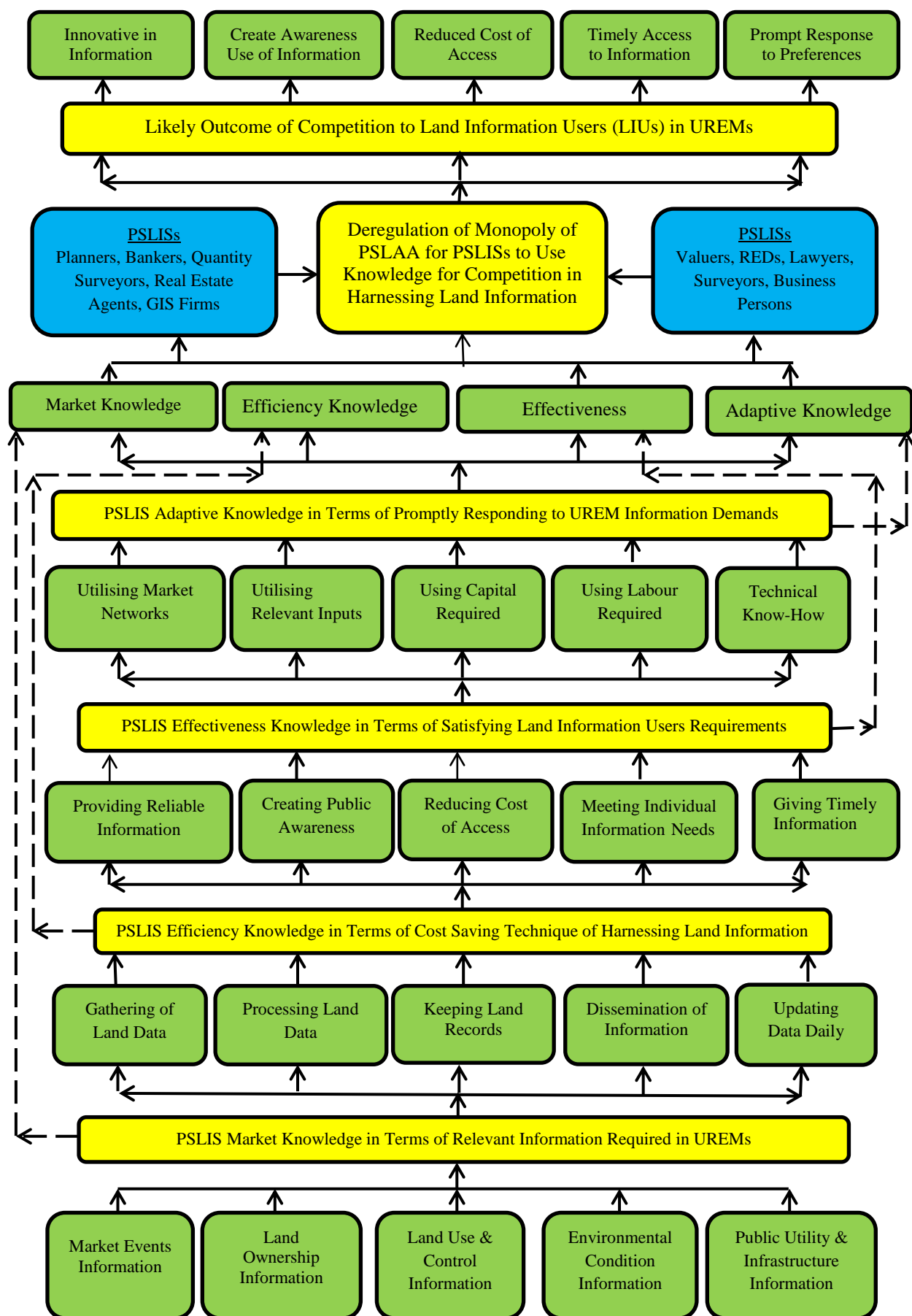


Figure 5.3: Conceptual framework for testing ETK in the real estate market

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The framework shown in Figure 5.3 informed questionnaires developed for verification of ETK among various categories of respondents for their candid responses. Succeeding discussions in Sections 5.6.1 to 5.6.4 focus on PSLIS whereas, Section 7 focuses on LIUs.

5.6.1 Application of Market Knowledge for Competition

Market knowledge in this context implies practical knowledge an entrepreneur possesses broadly about urban real estate markets by virtue of personal experience, vicarious experience of others or by intuition. This relates to possession of economic information about land information delivery service opportunities in the current deficient land information regime. It relates further to knowledge of informational content of land information required in the market on daily basis for use but cannot be easily found and used by individuals to make informed choices and decisions in urban real estate markets.

In order to elicit the degree to which prospective land information entrepreneurs possess economic information about existing information requirements in local UREM, the following are used as proxies in a self-reporting questionnaire. The proxies are informed by theory and derived from practical sources as shown in Table 5.1. The proxies are grouped into five categories with the first being knowledge of the kind of land information that is in urgent demand in the market such as market information about:

- (i) availability of type of property or land for a particular purpose;
- (ii) nature of interest;
- (iii) comparable values of transactions taking place in the market;
- (iv) dimensions of plots and properties; and
- (v) social amenities available in areas where various properties and lands are located.

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Second, is degree of knowledge about market demand for information about land ownership and registration information and the opportunities in competing to supply information on:

- (i) freehold or leasehold interest in land or property to be acquired;
- (ii) reputed owner of land or property;
- (iii) principal witnesses to the stool or family land;
- (iv) encumbrances on the property; and
- (v) state interest in the property.

The third category of market information proxy is degree of knowledge about demands for land use and development control information on:

- (i) type of land use such residential, commercial, or industrial;
- (ii) restrictions on land uses;
- (iii) permissible heights of property in certain areas; and
- (iv) building approval and development permit.

The fourth category of market knowledge proxy includes degree of knowledge about demands for environmental information on the following:

- (i) protected environmental sites and areas;
- (ii) environmental history of preferred area;
- (iii) potential environmental threats;
- (iv) age of property; and
- (v) earthquake prone zone;

Finally is degree of practical knowledge about market demand for information on public utility and infrastructure services on the following for decision making in urban real estate markets:

- (i) access roads;
- (ii) availability of utilities; and

- (iii) right of way for public utilities and reservations for future expansion of infrastructures.

Thus, these are derived concepts that relate to market knowledge that may be required for collection, processing, storage and dissemination of land information in urban real estate markets.

5.6.2 Application of Efficiency Knowledge in Competition

Efficiency knowledge refers to economic information entrepreneurs possess in relation to cost saving techniques that an entrepreneur possesses and can enable reduction in the cost of harnessing land information. This includes cost saving skill that can be used in competition for:

- (i) collecting data in relation to landed property;
- (ii) processing data collected in relation to landed property;
- (iii) storing information processed;
- (iv) dissemination of information harvested; and
- (v) updating the information on regular basis.

5.6.3 Application of Effectiveness Knowledge in Competition

Effectiveness knowledge in context refers to skill about satisfying land information demands in urban real estate markets by providing the right land information at the right time, and the to the right land information users. Land information users may require facts in the form of reliable information in other to make informed decisions and choices relating land and property. Thus, entrepreneurs who possess economic information about the needs of land information users in terms of the kind of land information and service that satisfy their needs and expectations in order to reduce information asymmetry are likely to attract more land information users than other competitors. Informed by ETK and, other literature, the following are used as proxies

for candid self-reporting responses from prospective land information entrepreneurs to find out their degree of possession of efficiency knowledge.

This includes self-assessed know-how that can be used for:

- (i) providing reliable land information to information users;
- (ii) creating public awareness that enables greater utilisation of land information;
- (iii) reducing cost of access to land information;
- (iv) delivering land information user-focused information in terms of information that suit the various needs in the market; and
- (v) timely land information delivery service.

5.6.4 Application of Adaptive Knowledge in Competition

Urban real estate markets under consideration are the type that one may describe as vibrant and dynamic. This, therefore, requires entrepreneurs with adaptive knowledge to respond to changing market conditions and associated demands. Hence, adaptive knowledge used in context means entrepreneurs' possession of know-how first, about periods of subtle changes that do occur in urban real estate markets and second, about strategies to quickly adjust and respond to changes in market demands if they do occur. This aspect of knowledge epitomises the flexibility of entrepreneurs to adapt to changing market conditions quickly unlike bureaucrats who are slow in detecting changes in the market and if they do, need budgetary approvals and other relevant approvals in order to initiate response to changes in market demands (Wolf, 1979).

It is obvious from the above that by the time the budgetary approval required is granted to enable bureaucrats respond to the changes observed in the market, the market conditions might have changed (McKean, 1999). As it is with other competitive markets, entrepreneurs who lack timely economic information to proactively adapt to changes in a market incur some costs such as first, loss of revenue opportunities for not

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being able to address changes before other competitors do and second, delayed response results in an entrepreneur focusing on outdated market changes (McKean, 1999). This suggests that discovery and possession of economic information and its utilisation promptly rewards entrepreneurs in competitive markets.

With competition for land information delivery service, the benefits of adaptive knowledge are likely to be applicable. This is because entrepreneurs who have already spotted and those who would be able to subsequently spot subtle changes in urban real estate markets may have advantage over their competitors by attracting more service users, derive benefits of higher revenue gains from increased volume of service delivery and most likely benefit from economies of scale. Indeed, it is a phenomenon common with most markets that the effect of being able to understand and address quickly subtle changes that occur in markets not only increases revenue opportunities but also it brings about significant reduction in the cost of doing business (McKean, 1999). In the context of this study an attempt is made to find out whether entrepreneurs possess relevant adaptive knowledge about urban real estate markets and are willing to utilise this knowledge given the opportunity for competition.

Thus, informed by ETK (Hayek, 1945) and secondary literature, proxies for self-report assessment on the degree of adaptive knowledge possessed by economic individuals relevant in this study are as follows:

- (i) market networks to liaise with for relevant sources of market data;
- (ii) resources to use in responding to changes in the market; and
- (iii) technical know-how to speedily respond to changes.

5.7 INFORMATION USER PERCEPTION ABOUT COMPETITION

Real estate market participants have a significant role to play in making competition successful depending on how their perception about whether competition can bring any

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improvement in land information service delivery. This perception is vital because it is expected that competition can better enable wide access to and use of a more reliable land information so that individuals will be well informed to partake in transactions in urban real estate markets. Thus, in a sense this will be the signalling factor of preferences in the market and new innovations in the market.

On the other hand, if for example, the scope of information asymmetry can be reduced, uncertainty and land disputes can be reduced, and then it is mostly likely that healthy flow and use of land information may enable market dealers and parties to transact with confidence and mutual trust. The outcome of this could be that prices of landed properties may reflect the true market values and the extent of land transactions will be optimal. This may come about as a result of actors with high potential of marginal productivity of land being induced to acquire land from those with low marginal productivity from land (Feder and Feeny, 1991).

Transactions with risk-free landed property owners and borrowers that may enable buyers and lenders to maximise their economic benefits may increase. The usefulness of land as a collateral is dependent on the absence of uncertainty and information asymmetry with regards to the rights in the land (Feder and Feeny, 1991). This is because investment in land may not be safe unless the rights to ownership of the land are stable and secure (Dale, 1997).

Finding out about the impact of competition from a perspective of land information users is key to this study because unlike under the prevailing monopoly regime, ETK impliedly suggests that competition in supply of land information in UREMs can enable the public have the following:

- a) Better awareness creation about land information service delivery;
- b) Reduction in cost of accessing land information;

- c) Reduction in time of accessing land information;
- d) Innovation in land information and service delivery;
- e) Responsive supply of information that better meets users preferences; and
- f) Land information users to know who will serve them best among competitors.

The above-mentioned expected outcomes from competition have been conceptualised into five key themes and incorporated into the conceptual framework in Figure 5.3.

5.8 PRICE SYSTEM AND LAND INFORMATION SUPPLY

Given that prospective land information suppliers have the know-how which prior to competition is subjective, under a competitive land information service delivery regime, the price system can be expected to act to coordinate the separate know-hows and actions of the different entrepreneurs. The implied outcome under this regime as proposed under ETK (Hayek, 1945) will be prices that guide competing land information service providers to coordinate their activities. This may take the form of coordinating with other competitors to know what is in urgent demand in the market and use the leading competitive price or market price as a reference point to learn and discover what new and innovative ways for land information service delivery has emerged as well as profit opportunities in the market.

It may also signal competitors about what is worth finding about offers in a market (Bronk, 2013). This may occur when price system signals that land information users are patronising the services of a particular land information service provider due to reduced cost and quality land information and better service delivery as a result of innovation or discovery of new facts about the market which hitherto was unknown to any competitor (Bronk, 2013). In effect, prices in competitive markets as envisaged in land information delivery service market will bring about a solution of effective and efficient administration of economic resources towards service delivery (Heath, 2007).

5.9 ASSUMPTIONS UNDERPINNING THE FRAMEWORK

To test the theoretical proposition that monopoly is a barrier to utilisation of entrepreneurial knowledge, a hypothesis is formulated. The hypothesis tests whether deregulation incentivises entrepreneurs to utilise knowledge possessed in competition for supply of land information in UREMs all things being equal. The hypothesis is tested based on the following assumptions similar to standard assumptions in economics analysis. These include:

- 1) Economic agents who are entrepreneurs are able and willing to engage in competition for supply of land information in urban real estate markets;
- 2) Economic agents possess a range of entrepreneurial knowledge that can be used in competition for land information supply;
- 3) Economic agents are profit seeking and maximising individuals; and
- 4) A private sector land information supplier (PSLIS) is risk taker.

5.10 SUMMARY OF CHAPTER

The chapter provides the conceptual framework for the research. It has identified and defined the specific variables to be measured. It has provided the confines of the research and also shows the likely relationship to be established in the field. The independent variables are four kinds of knowledge namely market, adaptive, efficiency, and effectiveness knowledge. Competition is the dependent variable. These variables have been derived from literature with insights from theory and are to be tested using private sector actors within the real estate sector.

The framework also depicts the likely outcome of competition, and this forms aspect of the study targeted at mainly land information users. However, within the context of the study area, landed property owners are considered as part of the respondents. Thus, with

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this background, the next chapter spells out the relevant variables and relationships that need to be verified and established in the field.

CHAPTER SIX

RESEARCH METHODOLOGY

6.0 INTRODUCTION

Chapter Five established the conceptual model and measuring frameworks by which the empirical investigation of ETK is to be undertaken. This chapter presents the research approach adopted for the investigation. The chapter first, presents an overview of philosophical assumptions and paradigms in research. This is followed by an introduction to research approaches, discussions on research approach adopted, strategy of enquiry, data collection procedure, sampling framework, and sample size used for the study. Also, measures and the necessary steps taken to reduce any inherent biases in the responses are discussed as well as the analytical frameworks applied in the study. Ethical consideration and research validity are also presented. The chapter ends with a summary.

6.1 PHILOSOPHICAL ASSUMPTIONS IN RESEARCH

There are five main philosophical assumptions that guide a researcher's choice of research design for undertaking a study. These according to Creswell (2007) are ontology, epistemology, axiology, rhetorical, and methodological assumptions. Succinctly, Creswell (2007, p. 16) explains that philosophical assumptions of the researcher's *stance toward the nature of reality* is ontology, whilst the assumption that relates to *how the researcher knows what she or he knows* is epistemology. Assumption relating to *the role of values in the research* is axiology and rhetoric is the assumption in connection with *the language of research*. Finally, methodology relates to the philosophical assumption about *the methods used in the process* of the research.

Other literature dilates a bit more on these assumptions particularly ontology, epistemology, and axiology. Knight and Turnbull (2008) for instance, indicate that epistemology as a sub-discipline of modern philosophy, is principally concerned with theories of knowledge, which attempt to answer questions about the nature of knowledge, its limit and how it is acquired. The knowledge in consideration according to Knight and Turnbull (2008, p. 65) is *justified true belief*, which is not just a true belief that constitute knowledge but a belief with an additional ingredient of justification. In this regard, Knight and Turnbull (2008) conclusively suggest that in designing a methodology to investigate a problem, a researcher is building an edifice of assumptions around claims to knowledge. Hence, the assumptions should be explored and justified where appropriate. Knight and Turnbull (2008) indicate that ontology is concerned with *existence or being* and that what is assumed to exist clearly has implications for what people claim to know, and vice versa.

Thus, the set of beliefs that is formed by the researcher tend to shape his or her intended inquiry. The set of beliefs, however, are termed differently in literature and this can sometimes cause confusion. In view of this, Guba (1990, cited by Creswell, 2007, p. 19) reiterates that the basic set of beliefs that guide an action, constitute a research paradigm or worldview. Creswell (2009) also summarises and mentions that Mertens (1998) and Lincoln and Guba (2000) refer to the set of beliefs as paradigms, whilst Crotty (1998) uses philosophical assumptions, epistemologies and ontologies. Creswell (2003) adopts alternative worldviews whilst Neuman (2000 cited in Creswell, 2003) uses research methodology. Thus, this research adopts the term methodology, which admittedly Creswell (2009) intimates is broadly adopted.

6.2 TYPES OF RESEARCH METHODOLOGY

A researcher has a choice among three types of research methodologies to explore for a study. These are quantitative, qualitative, and mixed methodologies (Creswell, 2009; Abdulai, 2010). An overview of each methodology is first presented. This is followed by detailed consideration of quantitative approach, which is adopted in this study.

6.3 QUANTITATIVE RESEARCH METHODOLOGY

The quantitative research approach also known as the “traditional”, “positivist”, “scientific or empirical method” or “empiricist”, is philosophically underpinned by the postpositivist research paradigm (Denzin and Lincoln, 2008; Knight and Turnbull, 2008; Creswell, 2009; Abdulai, 2010; Denscombe, 2010). Succinctly, Creswell (2009) explains that the positivist paradigm involves empirical observation, measurement, and theory verification. Descombe (2010) elaborates that the positivist paradigm knowledge claim has an underlying assumption that truth emerges from what can be observed, measured, and studied as objects that exist independently of the researcher and researcher’s undue influence. Within the social sciences, the use of quantitative methodology, therefore, as explained by Abdulai (2010) entails an inquiry into a social or human problem based on testing a theory composed of variables, measured numerically and analysed using statistical approaches to determine or reflect the event itself.

Adopting a quantitative methodology goes with an advantage of collecting and analysing data within a reasonably shorter period of time than required in qualitative research (Creswell, 2009; Abdulai, 2010). The methodology, however, relies heavily on statistical packages such as SPSS among others for data analysis (Peng *et al.*, 2002; Abdulai, 2010). This, therefore, requires strong statistical background knowledge of the researcher since these statistical packages generate various tables and quantitative

measures that the researcher needs to interpret (Creswell, 2009; Abdulai, 2010). Hence, a limitation of the methodology is that if a researcher's knowledge of statistics is limited, the researcher can incorrectly interpret the statistical measures leading to inaccurate conclusions. In addition, the pervasive use of closed-ended questions in the data collection process may introduce some element of bias in the respondents' answers (Creswell, 2009; Abdulai, 2010). This suggests that in order to minimise biasness, relevant measures and the kind of analysis to use must be considered in advance.

6.3.1 Strategies of Inquiry in Quantitative Research

Two types of strategy of inquiry are employed in quantitative research. These are survey or non-experimental and experiment (Creswell, 2009; Denscombe, 2010; Abdulai, 2010). A survey is a non-experiment design (Creswell, 2009) used for gathering data. First, it provides a quantitative or numeric description of trends, attitudes, or opinions of a population through a study of a sample of the population. Second, Babbie (2001 cited in Creswell, 2009) and Abdulai (2010) indicate that it includes cross-sectional and longitudinal studies using structured questionnaires or interviews for collecting data with the intent of generalising from a sample to a population. In a cross-sectional survey, all data on relevant variable is collected at the same time or within relatively short time framework whereas a longitudinal survey involves data collection over long periods of time (Abdulai, 2010). In brief, cross-sectional survey provides a snapshot of variables included in the research at a particular point in time whereas, longitudinal survey permits measurement of change in variables over time through measurements taken on each variable over two or more distinct time period (Abdulai, 2010).

An experiment, according to Denscombe (2010) is an empirical investigation under controlled conditions designed to examine the properties of, and relationship between specific factors. As the bedrock of research in the physical sciences, an experiment has

three things underpinning it as: identification of causal factors (cause and effect), a control group, and empirical observation and measurement (Denscombe, 2010). In an experimental research, the primary intent of the experiment is to test if a specific treatment influences an outcome (Creswell, 2009; Abdulai, 2010). In this regard, the researcher may also identify a sample and generalise the findings to a population. Experiments are used in both physical and social sciences (Abdulai, 2010) but more predominantly in the former. In the physical sciences it is laboratory-based whereas in the social sciences it is field-based (Abdulai, 2010). The field-based surveys have procedures to gather the relevant data required for analysis.

6.3.2 Data Collection Procedures in Quantitative Research

Data collection methods in quantitative research paradigm include observation, documentary evidence, and interviews (Abdulai, 2010). Using interviews as data collection method in a quantitative study involves the design and administration of structured closed-ended questionnaire, which offers optional responses to respondents (Abdulai, 2010). The respondents have limited set of response choices from questions which may take the form of:

- (i) two optional response questions such as Yes or No;
- (ii) matrix questions that is a series of questions that share the same set of closed-ended response options; and/or
- (iii) rank ordering that ask the respondents to put a list of responses into an order of preference (Abdulai, 2010).

There are five strategies that can be adopted to administer questionnaire in a quantitative research. These are mail/postal, fax, telephone, internet either web based or email, and face-to-face interviews. Each of these strategies has its strengths and weaknesses (Abdulai, 2010).

Use of Likert scale in questionnaires for data collection is a common practice in quantitative studies. The Likert scale originally designed by Likert (1932) as a five-point summated rating scale typically uses response choices for each item of measurement on the scale (Dawis, 1987; Spector, 1992; Gliem and Gliem, 2003; Croasmun and Ostrom, 2011). The five response alternatives originally proposed typically include: “Strongly disagree”; “Disagree”; “Undecided”; “Agree”; and “Strongly agree” (Clason and Dormody, 1994; Jamieson, 2004; Croasmun and Ostrom, 2011). Spector (1992) describes it as a summated rating scale with at least four characteristics as follows:

- (i) it has multiple items that can be combined or summed;
- (ii) each individual item measures something that has an underlying quantitative measurement continuum;
- (iii) each item has no right answer which differentiates it from a multiple-choice test; and
- (iv) each scale item is a statement and respondents are asked to give rating about each statement that reflects their response (Gliem and Gliem, 2003).

The Likert scale, as originally proposed, is often used in various fields of study such as social sciences, marketing, medicine, business and psychological studies (Spector, 1992; Gliem and Gliem, 2003). Specifically, it is used in measuring attitudes and opinions or satisfaction in opinion surveys by providing five points or series of response alternatives to a given question or statement (Clason and Dormody, 1994; Argyrous, 2002; Antwi and Adams, 2003; Gliem and Gliem, 2003; Jamieson, 2004; Croasmun and Ostrom, 2011). In the knowledge management literature, measurement of tacit knowledge using the Likert scale is profound.

For example, Bontis (1998) uses 7-point Likert scale to measure and develop models for intellectual capital. Flynn and Goldsmith (1999, p. 58) using a 7-point Likert scale argue that *the most common way subjective knowledge has been measured is with a single self-report item with various types of response formats used*. Moorman *et al.* (2004) used 7-point Likert scale within the knowledge management literature whereas Dhanaraj *et al.* (2004) used 5-point Likert scale for a study on managing tacit and explicit knowledge transfers in international joint ventures in Hungary.

Furthermore, Brachos *et al.* (2007) explored 7-point Likert-type scale in a study of perceived usefulness of knowledge where respondents were asked to access their agreements to statements made. Li *et al.* (2008) employed a 5-point Likert scale to measure knowledge creation process variable, which is socialisation, externalisation, combination, and internalisation in Taiwan Securities and Futures Institute. Finally, Zhang *et al.* (2012) used a 7-point Likert scales ranging from 1 equal to strongly disagree to 7 for strongly agree in a study on mechanism for tacit knowledge integration.

6.3.2.1 Reducing Biases in Rating Measurements

Surveys involving subjective rating opinions of individuals are often susceptible to certain response biases on the part of the individual respondents (Dawis, 1987). Dawis (1987) accordingly identifies at least three types of response bias in rating opinions. These are first, level bias or the tendency to locate the mean of the ratings high on the scale as *leniency or generosity*, low on the scale which is *strictness or severity* or in the middle that is *central tendency*. Second is the dispersion bias, or the tendency to constrain or expand the distribution of ratings such as use of a small segment of the scale versus use of the full range. The third bias is correlation bias which, applies when several rating scales, dimensions, or items or variables are involved. According to

Dawis (1987) in this situation, a common tendency called the *halo effect* results in the highest correlation of variables whereas low or zero correlation which is the opposite tendency is rare if ever observed.

Interrater agreement and interrater reliability are two main known techniques that can be used in tracing sources and causes of biases in ratings, and in ensuring treatment of the biases and validity of the results as they account for errors in observations (Tinsley and Weiss, 1975; Liao *et al.*, 2010).

6.3.2.2 Interrater Agreement Index

Tinsley and Weiss (1975, p. 359) explain interrater agreement as *the extent to which different judges tend to make exactly the same judgements about the rated subject*. It is the consensus among raters (Kozlowski and Hattrup, 1992; James *et al.*, 1993). Also known as “Within-Group Agreement” according to Bleise (2000), it reflects the degree to which raters provide essentially the same rating. Thus, on a numerical scale, interrater agreement means that the judges assigned exactly the same values when rating the same object (Tinsley and Weiss, 1975).

It is worthy to mention interrater reliability, which is sometimes confused with interrater agreement. According to Tinsley and Weiss (1975, p. 359) it is the degree to which ratings of different judges are proportional or consistent *when expressed as a deviation from their means*. It is a measure of assessing the relative consistency of responses among raters (Kozlowski and Hattrup, 1992; Bliese, 2000). This is due to the fact that there is a possibility of high reliability within low agreement (Bliese, 2000).

Two broad tests on interrater agreement can be identified in the literature as follows;

- (i) Interrater Agreement Index r_{wg} and $r_{wg(j)}$; and

- (ii) Average Deviation Index AD and $AD_{M(j)}$ for interrater agreement (James *et al.*, 1993; Burke *et al.*, 1999; Bliese, 2000; Tuuli, 2009). The relevance of each of these is explained as follows.

James *et al.* (1984, 1993) building on the work of Finn (1970) proposed interretater agreement which received the support of Kozlowski and Hattrup (1992) as a technique that can be used in estimating agreements among raters. Since then, r_{wg} as an index has been identified as the most common measure of interrater agreement or within-group agreement for single item scales and $r_{wg(j)}$ for multiple item scales (James *et al.*, 1984, 1993; Bliese, 2000). The r_{wg} is calculated by comparing an observed group variance to an expected random variance (Bleise, 2000). Bleise (2000) explains that in classical test theory, uniform distribution assumes no response bias, however, it is likely that some degree of response bias will be present in many of the data collected. Under the circumstances of response bias, the uniform distribution is a poor choice to use for random distribution (Bleise, 2000). James *et al.* (1984 and 1993) proposed technique therefore differs from uniform distribution of error assumption in classic theory test.

Unlike the classical test theory, James *et al.* (1993) define total variances as the sum of true variances and random-measurement-error and further argue that total variance comprises random measurement error variance and systemic variance (Liao *et al.*, 2010). James *et al.* (1984 and 1993) assert that random measurement-error variance is caused by random factors such as emotional fluctuation, changes in motivation, less attention, illness, fatigue and stress whereas systematic variance includes both true variance and variance that reflect biases among raters. The conclusion thereof is that total variance is related to the rater (Liao *et al.*, 2010).

Theoretical and practical reasons for calculating r_{wg} according to Bleise (2000) include first, the magnitude of the r_{wg} is not dependent on between group variance. Second, it provides a measure of agreement for each group rather than an omnibus measure for the group as a whole (Bleise, 2000). As a rule of thumb over the years, r_{wg} values greater than .70 has been accepted and used to demonstrate sufficient agreement to warrant aggregation of ratings (Burke and Dunlap, 2002; Harvey and Hollander, 2004).

The r_{wg} index, however, has been criticised for the rule of thumb that values of r_{wg} greater than .70 demonstrates sufficient homogeneity to warrant aggregation. This cut off point has been criticised and described as arbitrary and lacks theoretical or empirical foundation (Cohen *et al.*, 2001; Harvey and Hollander, 2004; Tuuli, 2007; Manu, 2012). According to Burke and Dunlap (2002) the .70 is only a heuristic cut off point for interrater agreement. Brown and Haustein (2005), therefore, extend the rule of thumb by categorising and suggesting that values from 0 to .59 to be considered as unacceptable agreement, .60 to .69 as weak agreement, .70 to .79 as moderate agreement, and .80 and above as strong agreement.

There are certain inherent flaws in interpretation and the ambiguity in choosing the right null hypothesis under the r_{wg} index for measuring agreement among raters. Burke *et al.* (1999) proposed AD as an alternative to the r_{wg} index. As an alternative to the r_{wg} , the AD index measures dispersion of responses about the mean or median responses (Burke and Dunlap, 2002). Mathematically, the AD index is computed as the average of the absolute deviations, ignoring plus or minus signs, of ratings from the mean AD_M or median AD_{Md} . Among these two indexes, Burke *et al.* (1999) assert that the average deviation based on the median AD_{Md} is more sensitive to detecting interrater agreement. This is because the AD_{Md} possesses the well-known property of being the point at which

the sum of the absolute deviations is minimal compared with any other point in the distribution including the mean. Burke and Dunlap (2002) concur with this assertion by revealing that the AD_{Md} is potentially a more robust indicator of interrater agreement (see Tuuli, 2009).

6.3.3 Sampling Techniques

Irrespective of the research methodology adopted for a particular study, it is often impossible to study all members of the group being studied as a population. Hence, samples as small-subgroups of the population have to be chosen for the study (Denscombe, 2010; Abdulai, 2010). The basic principle underlying sampling is that it is possible to produce accurate findings without the need to collect data from each and every member of the study population (Field and Liu, 2008). According to Denscombe (2010) selecting a sample from a population can be done either by way of representative sample or an exploratory sample.

A representative sample involves a cross-section of the population and often tends to be associated with larger surveys and with the use of quantitative data. An exploratory sample is used as a means of probing relatively unexplored topics and as a route to the discovery of new ideas or theories and often used in small-scale research and lend itself to the use of qualitative data (Denscombe, 2010). Whatever means is adopted, there are basically two approaches to the selection of samples, which are probability sampling and non-probability sampling (Denscombe, 2010; Abdulai, 2010). Having reviewed the focal literature on all the techniques and in view of space considerations, succeeding discussion focuses on probability sampling and specifically systematic sampling which was used in the study.

6.3.4 Probability Sampling

Probability sampling depends on the use of random selection and it is known as such because it is based on statistical theory relating to the normal distribution of events (Denscombe, 2010) or probability theory (Abdulai, 2010). Probability sampling according to Denscombe (2010) works best with large numbers where there is a known population (with number and characteristics) and a sampling frame from which the sample is to be selected and it tends to be associated with large-scale surveys. There are various types of probability sampling techniques which include simple, systematic, stratified, and cluster random sampling techniques. However, only systematic sampling as the relevant technique is discussed having reviewed literature and found its appropriateness than other techniques (Field and Liu, 2008; Abdulai, 2010; Denscombe, 2010).

Systematic random sampling has an element of the principle of random selection or randomness (Field and Liu, 2008) where randomness from statistical point of view according to Denscombe (2010, p. 27) means that *each unit should have an equal or known probability of inclusion in the sample*. The use of this technique involves choosing every n^{th} item on a list of sample frame, with the first sample unit being settled by some simple random method (Abdulai, 2010; Denscombe, 2010). As a technique, it is useful when the population is homogenous and very large. Its advantage also is that it is less cumbersome than simple random sampling which uses a table of random numbers (Abdulai, 2010). However, where the selection interval matches some pattern or order in the list, systematic bias is likely to be introduced in the sample (Denscombe, 2010; Abdulai, 2010). The section that follows addresses the subject of sample size determination.

6.3.4 Selection of Sample Size

Given that there is a population of known size, Field and Liu (2008) opine that the sampling fraction (n/N) can be relied on to determine the members of a population to be selected systematically. In a more practical term, Denscombe (2010) indicates that there are basically three approaches to the calculation of the sample size. These are statistical, pragmatic and cumulative approaches. The statistical approach according to Denscombe (2010) is best suited for probability sampling techniques and large-scale surveys such as opinion polls and government surveys, which normally involve large population and cost a lot of money.

The pragmatic approach on the other hand is often used by market researchers who estimate the sample size on the basis of years' experience and on what works well enough within a given resource constraints. Denscombe (2010) posits that using this approach is underpinned by three pragmatic reasons. These are:

- (i) availability of resources affects researcher decision on sample size;
- (ii) nature of research population and the fact that many of the population that can be studied are relatively small; and
- (iii) used properly, non-probability sampling techniques can produce data that are sufficiently accurate for the purpose of the research.

Hoinville *et al.* (1985, p. 73 cited in Denscombe, 2010, p. 46) that *In practice, the complexity of the competing factors of resources and accuracy means that the decision on sample size tends to be based on experience and good judgment rather than relying on a strict mathematical formular.* Literature further corroborates the arguments advanced above.

For example, Abdulai (2010) also suggests that in practice the researcher needs to estimate how many responses will give the researcher sufficient precision at an

affordable cost. According to Abdulai (2010) estimating an appropriate sample size is contingent on several factors unique to each survey. The researcher's decision however, regarding these factors depends on the following:

- (i) how accurate the researcher wishes to be;
- (ii) how confident the researcher wants to be in the results; and
- (iii) what budget is available to the researcher.

These factors have been considered for this study (see

6.4 QUALITATIVE RESEARCH METHODOLOGY

In qualitative research, the researcher explores and attempts to understand the meaning individuals or groups ascribe to a social or human problem unlike quantitative research where the researcher tests theories by examining the relationship among variables (Creswell, 2009). As a field of inquiry, it does not belong to a single discipline and cuts across disciplines, fields and subject matters and also as a set of interpretive activities, it privileges no single methodological practice over another (Denzin and Lincoln, 2008). It refers to the type of research that produces findings not arrived at by statistical procedures or other means of quantification although some of the data can be quantified but the analysis is extensively interpretative (Strauss and Corbin, 1998). It involves non-mathematical process of interpretation with the object of discovering concepts and relationships in raw data and organising them into theoretical explanatory schemes (Strauss and Corbin, 1998).

The choice of qualitative approach to research is mainly determined by the nature of the research problem and also by the preference and/or experience of the researcher based on one's discipline and philosophical orientation (Strauss and Corbin, 1998). The adoption of qualitative methodology provides a deeper understanding of the phenomenon under investigation and requires considerable length of time to collect the

necessary information as compared to quantitative method. Strauss and Corbin (1998, p. 11), therefore, hint that literature suggests qualitative research can be used as follows:

- (i) in exploring substantive areas about which little is known or much is already known but to obtain novel understandings; and
- (ii) to illicit the intricate details about a phenomenon such as feelings, thought processes, and emotions which are difficult to extract or learn about through the more conventional research methods.

These can be achieved through various strategies considered as follows.

6.4.1 Data Collection Methods in Qualitative Research

Research questions in qualitative research are explored via interviews, observations, and documentary evidence as well as audio-visual materials. Interviews as the main data collection method often employed for primary data collection can take the form of face-to-face interviews, focus group interviews, and unstructured interviews (Creswell, 2009; Abdulai, 2010; Denscombe, 2010). The face-to-face interview also known as one-to-one interview involves a meeting between one researcher and one respondent and enables the researcher to locate specific ideas with specific respondent (Denscombe, 2010). It can be conducted using either structured, unstructured, or semi-structured interviews where questions posed are mainly open-ended (Abdulai, 2010). Open-ended questions allow participants to provide answers they think are right rather than making a choice among optional answers provided in close-ended questions where the researcher asks respondents the same questions (Abdulai, 2010).

6.5 MIXED METHODOLOGIES

The mixed methodologies also known as multi-methodology or pragmatic approach (Abdulai, 2010) involves the combination or association of both qualitative and quantitative research forms (Creswell, 2009). It is a direct offspring of classical

experimentalism (Denzin and Lincoln, 2008). According to Howe (2004, cited in Denzin and Lincoln, 2008, p. 12) positivists have found a place for qualitative methods in mixed-methods experimental designs by designing qualitative methods which may be *employed either singly or in combination with quantitative methods, including the use of randomised experimental designs*. Similarly, Teddlie and Tashakkori (2003, p. 15 cited in Denzin and Lincoln, 2008, p. 120) mention that mixed methods divide inquiry into two categories namely exploration versus confirmation and assign qualitative work to the former and quantitative research to the latter. It utilises the strengths of both quantitative and qualitative research and normally when used provides an expanded understanding of research problem.

There are three main strategies associated with mixed method research paradigm. These are sequential procedure, concurrent procedure, and transformative procedures (Morgan, 1998; Creswell, 2009; Abdulai, 2010). With sequential procedure, the researcher seeks to elaborate on or expand the findings of the quantitative methodology with qualitative methodology or vice versa (Creswell, 2009; Abdulai, 2010). Hence three strands emerge from this sequential explanatory strategy, which is characterised by the collection and analysis of quantitative data in a research followed by the collection and analysis of data which help build on the research of initial quantitative data (Creswell, 2009).

Typically, weight (Creswell, 2009) or priority (Abdulai, 2010) is given to the primary quantitative data because it informs the secondary qualitative data collection. Both approaches are separate but connected (Creswell, 2009) and it is better suited for explaining relationships (Abdulai, 2010). It is useful when unexpected results emerge from a quantitative study and as a result the qualitative approach helps examine the emerging results in more detail (Morse, 1991; Creswell, 2009). There is also a

sequential transformative strategy, which unlike the sequential exploratory and explanatory approaches has a theoretical lens that guides the study (Creswell, 2009). Creswell (2009) and Abdulai (2010) provide further elaboration on the concurrent strategy and transformative strategy. Creswell (2009) also provides strategies used in the mixed method.

6.6 RESEARCH METHODOLOGY ADOPTED

The aim of this study is to empirically assess whether competition among private sector entrepreneurs in supply of land information is a better alternative method to address the problem of information asymmetry in UREMs. Against this backdrop, the researcher sought to establish the objective truth about whether there are potential land information suppliers who possess entrepreneurial land information harnessing knowledge and there is the likelihood of utilisation of the knowledge in competition if land information supply is deregulated. Thus, taking into account the positivist philosophical stance and also cognisance of existence of qualitative and mixed methodologies, the researcher adopts a quantitative research methodology.

Quantitative methodology is adopted in line with the aim and objectives set for this study followed by the research design, which is generally to assess relationship between competition and knowledge (Denzin and Lincoln, 2008; Creswell, 2009; Denscombe, 2010; Abdulai, 2010). Through the quantitative methodology, the study verified the extent to which ETK propounded by Hayek (1945) is likely to be applicable to responsive harnessing of land information in UREMs in Ghana.

6.7 STRATEGY OF INQUIRY

Survey was the strategy adopted to collect relevant data in Accra, the capital of Ghana and study city. The strategy was used for gathering data on land information demand and supply side respondents as well as landed property owners as stakeholders. The

strategy was used for gathering rating opinions of the sample population based on structured questionnaires (Creswell, 2009; Abdulai, 2010). This particular strategy was adopted because the focus of the study was to collect data to provide a snapshot of the variables included in the research throughout the period of four months from November 2012 to February 2013. Antwi (2000), Gouth and Yankson (2000), Antwi and Adams (2003) and Hammond (2006a) among other researchers have used the strategy in data collection for quantitative studies in urban real estate markets in Accra, Ghana. Thus, it can be inferred from the foregoing that the strategy has been tried and tested with successful outcome and, therefore, it was appropriate for the study.

6.8 DATA COLLECTION METHOD AND INSTRUMENTS USED

Before discussing the data collection method and instrument used, it is worth to mention the kind of data collected, the study population and sample. Both primary and secondary data was collected during the survey. In all, primary data for statistical analysis was collected from 477 individuals on demand and supply sides as well as landed property owners. The population for the study included the following:

- a) Users of land information as land information service consumers;
- b) Owners of landed property as sellers, managers, and developers who are stakeholders with concerns about who can efficiently take custody of information about their landed properties; and
- c) Suppliers as potential private sector entrepreneurs who may be willing to compete in harnessing of land information.

Detailed narrations of each of the above are provided in Sections 6.8.5, 6.8.6, and 6.8.7 respectively after an introduction to how each respondent was selected. Meanwhile, Table 6.1 shows a breakdown of the respondents.

Table 6. 1: Total number of respondents

Category of Respondents	Number of Respondents
Land Information Users	261
Intermediary Users	20
Land and Property Owners	114
Potential Land Information Suppliers	102
TOTAL	477

A further breakdown of the 261 land information users is categorised and labelled as follows; external users (167), internal users (74), and intermediary users (20). For the 114 landed property owners, the breakdown is as follows; 102 individual landed property owners, 7 customary land owners, and 5 real estate residential development companies.

6.8.1 Interviews and Use of Close-ended Questionnaires

The study mainly used interviews to gather the relevant primary data. Face-to-face interviews as a primary data gathering method was used taking into consideration the various options or strategies available such as mail/postal, fax, telephone, internet either web based or email, which can be used to interview respondents (Creswell, 2009; Abdulai, 2010). The method apart from its known advantages mentioned earlier (Abdulai, 2010; Denscombe, 2010), enabled rapid and high response rate and also enabled after-response interaction with respondents who showed further interest in the study. It also facilitated on the spot screening of responses to ensure that omissions or commissions such as double ticking of rating responses among others were minimised.

In terms of interview instrument, the study relied mainly on close-ended questionnaires as data collection instrument. This has the advantage of achieving reliability of measurements and consistency of responses from respondents (Creswell, 2009) since the researcher asks respondent the same set of questions (Abdulai, 2010). They are also

amenable to making statistical inferences and generalisations of data collected. This was done bearing in mind the inherent disadvantage that effective use of close-ended questionnaires depends on the researcher's ability to construct a scale with the appropriate scale items in the questionnaire (Creswell, 2009; Abdulai, 2010).

Fortunately, literature lends a support by suggesting that the disadvantage mentioned above can be addressed through extensive literature review coupled with experience and knowledge of the field or subject area the research is being conducted (Creswell, 2009). Ample evidence is provided in Chapter Five to this effect. Also, mindful that pervasive use of closed-ended questions in data collection process may introduce some element of bias in the respondents' answers (Creswell, 2009; Abdulai, 2010), relevant corrective measures and statistical methods were applied to minimise the occurrence and influence of events likely to introduce personal bias into the responses by the researcher. A mini pilot survey to enable review of the questionnaires was helpful in this regard (see Section 6.11).

Three categories of closed-ended questionnaire were designed and administered face-to-face to land information demand and supply respondents and the third one for landed property owners. The questionnaires were designed in the form of Likert type scale with questions fashioned in a form of matrix (that is a series of questions) that share the same set of closed-ended response options from strongly disagree to strongly agree (Oppenheim, 1996; Abdulai, 2010). Further discussions on the Likert scale used are provided under Section 6.8.3

Regarding the demand side category, the questionnaire was used to elicit relevant background data of respondents and subjective but candid rating opinions on:

- 1) What constitute a useful set of standard land information by rating the degree to which they require information on market data, land ownership, land use, environmental condition, and public amenities for decision making;
- 2) About whether competition will enable healthy flow of information than the prevailing monopoly system; and
- 3) Willingness to pay for an improved land information service.

Specifically, the questionnaire administered consisted of four sections each with limited set of optional response choices from questions. Apart from Section A, which focused on respondents' background data, the questionnaire consisted of 37 single item rating responses with an option for respondent's comments at the end (see Appendix 2).

The supply side responses followed a similar pattern but with seven sections and different focus mainly by eliciting candid self-report on subjective knowledge possessed by respondents sampled as potential private sector land information suppliers. The questionnaire consisted of six sections with a total of 57 single item rating responses designed for easy reading and responses (see Appendix 3). Section A focused on relevant background of respondents that includes nature of business operation, position of respondent and level of education. Descriptive statistics of these are provided in Chapter Eight.

Sections B, C, D, and E correspondingly focus on degree of market, adaptive, effectiveness, and efficiency knowledge possessed by respondents as proxies of knowledge and measurable as independent variables. Section F focuses on the respondents' perception about the appropriate method to ensure effective harnessing of land information. Finally, three optional response questions such as 'No', 'Don't Know' or 'Yes' at the end of the questionnaire were posed to narrow respondents' responses specifically to question whether they possess the kind of knowledge that influences

dynamic competition. This approach makes the questionnaire take a funnel-shaped form (Oppenheim, 1996; Abdulai, 2010).

The third category of questionnaire was administered to individual landed property owners at three different locations in Accra and to real estate developers as well as easily accessible customary land owners either as family head or head of stool, which is, a chief. The questionnaire was made up of three sections with Section A commonly eliciting gender and educational level among other relevant information. Sections B and C respectively contained 22 and 10 single item response options on degree of willingness to provide landed property information to either PSLAs or the private sector operator. Space was provided for further comments from respondents (see Appendices 4). The questionnaire was adapted to suit each of the three categories namely, landed property owner, family head/chief and real estate developer.

6.8.2 Sourcing of Secondary Data

Secondary data used was sourced based on permission and subsequent approval from various agencies. Following this, for all the secondary data sourced, access was allowed to the actual data files, folders, ledgers, annual and other reports, or printed out from the electronic system in consultation with the researcher and what was required. For example personal access was allowed to ledgers containing land information search applications at the PVLMD of the Lands Commission. From the PVLMD records, secondary data for completed searches was systematically sampled between the period 2007 and 2012 for pre and post-merger land information supply service delivery performance analysis (Chapter Seven).

Furthermore, secondary data on land related crime and litigation was sourced and used for analysis in the study. In relation to crime, the file containing quarterly and annual reports on land related crimes and complaints either investigated or under investigation

at the Greater Accra Regional Criminal Investigation Department (CID) headquarters of the Ghana Police Service were sourced and relevant data extracted upon written approval from the Regional Police Command. Data on land related litigation was obtained from the Specialised Land Court Division in Accra (see Chapter Seven).

6.8.3 Use of Likert Scale Format for Data Collection

The study, as mentioned in Section 6.8.1, predominantly explored Likert-type scale for data collection on subjective opinions or respondents. The five response alternatives originally proposed typically include: “Strongly disagree”, “Disagree”, “Neither agree nor disagree”, “Agree”, and “Strongly agree” (Clason and Dormody, 1994; Jamieson, 2004; Croasman and Osteron, 2011). Each of these verbal response alternatives was assigned numerical a value on the scale in the questionnaire as follows: “1=Strongly disagree”, “2=Disagree”, “3=Neither agree nor Disagree”, “4=Agree”; and “5=Strongly agree”.

Indeed, rating scales in the manner above have proven to be the most appropriate means to obtain information about respondents’ attitudes and perceptions or analysing particular attributes compared to asking a long list of questions for respondents’ responses (Rea and Parker, 1997; Baker, 2003; Braimah, 2008; Coasmun and Ostron, 2011). Hence, the study explored Likert scale in the manner mentioned above to verify the concept of competition in urban real estate markets from demand and supply perspective of land information harnessing as well as landed property owners perspective. In relation to the supply perspective, which is the key thrust of ETK, the scale was used as means to elicit responses from potential land information suppliers for measuring practical knowledge they possessed that is likely to be used in competition to supply land information. Measuring knowledge in this way appears to be a novel idea in UREMs as no evidence was found in the focal literature.

Considering the background provided, systematic sampling was adopted in selecting all categories of respondents to the Likert scale questionnaires. Prior to providing the details, it would appear appropriate to address the subject of sample size, which as presented as follows.

6.8.4 Determination of Sample Size

The 477 responses obtained using Likert scale type questionnaire, represents 95.4% of a targeted total of 500 planned. The total sample size targeted for the study was about 500 respondents in anticipation that this will statistically reflect the saturation point of data to be collected, significantly represent the total population and also provide high accuracy of results. This estimation falls within the pragmatic approach to determining a sample size for a study as suggested by Denscombe (2010) and Abdulai (2010). Section 6.6 discussed earlier provides details on sample size determination. Hence, the projection was made against the backdrop from focal literature, which revealed that a minimum of about 60% response rates is achievable from the targeted sample size.

Antwi (2000) obtained a total of 305 respondents whereas Gouth and Yankson (2000) also surveyed 233 respondents as a representative sample size of a survey in urban real estate markets. Hammond (2006a) in a study in the study area out of an initial 500 questionnaires got a total of 303 responses. It has been argued that generally, the larger the sample size the more closely the sample data will match that from the population (Abdulai, 2010). Thus, most results were analysed at 99% confidence interval to show that the sample sizes are significant. See Chapters 8, 9 and 10 on the breakdown of the sample sizes.

6.8.5 Selection of Land Information Users as Respondents

First of all, the three broad categories of research respondents labelled as land information users (LIUs), potential private sector land information suppliers (PSLISs),

and landed property owners (LPOs) were selected through a convenience systematic random sampling technique. Land information users refer to those who were identified at four designated on-site areas at the PVLMD premises of the Lands Commission. These are respondents who have applied for an official search information report on landed property. These designated areas are the Client Service Unit, Presentation Office, Records Office, and Search Report Collection Desk where Schedule officers were inducted earlier on the questionnaire administration. Systematic sampling of respondents was based on every 3rd applicant that went to any of these Units at the start of each day either to submit a fresh application or to collect a completed search application.

6.8.6 Selection of Landed Property Owners as Respondents

For landed property owners, three neighbourhoods were selected for questionnaire administration. These include Gbawe, Manet Palm estate, which is a gated community at Ogbodjo a suburb of Accra, and the third one being Lashibi, a site and serviced area near Tema, a harbour city in the GAR. Gbawe was selected mainly because of being an area with Customary Land Secretariat established in the GAR, under LAP-1. It is also a neighbourhood with relatively structured land ownership system in Accra and an area that attracts most studies (Blocher, 2006). Two staff of the Secretariat helped in administering the questionnaire using a systematic random sampling of every third property west, east, south, and north from the Gbawe Customary Land Secretariat as the starting point.

The same process was repeated for Lashibi as a Tema Development Corporation site and serviced plots residential area. Manet Palm Estates as a gated community was selected among others because of approval granted by private security personnel guarding the estate and a known resident accompanying the researcher during

questionnaire administration. Within the Manet Palm estate, the list of properties was obtained at a security post and from this the random sampling of every third property was used in selecting the particular property to approach to administer the questionnaire. Altogether, these areas yielded responses that reflected the various classes of Ghanaian population in terms of gender, age, and educational level.

Real estate development companies were also included in this category. The list of Ghana Real Estate Developers Association (GREDA) was accessed upon a visit to the Secretariat and the researcher directed to obtain the list online. The list retrieved online was national in character. The list consists of name and telephone number of the members. Hence, a respondent who was selected and was out GAR was replaced by the next member on the list then followed by every 3rd member on the list. Some of the members were also selected as potential information suppliers.

6.8.7 Selection of Potential Land Information Suppliers as Respondents

For potential land information suppliers, respondents were sampled based on a predetermined systematic sampling of every 3rd name on a membership list made available. Respondents in this category are private investors and reputable companies as potential private sector land information suppliers (PSLIS). Respondents were sampled from the following:

- (i) Ghana Institution of Surveyors (GhIS) 2012 membership list, which is the Ghanaian equivalent of Royal Institute of Chartered Surveyors (RICS) with three Divisions namely Valuation and Estate Division, Land Surveying Division, and Quantity Surveyors Division. Respondents were sampled from the three divisions.

- (ii) 2012 named Ghana Club 100 list obtained from the Ghana Export Promotion Centre. The list contains Ghana's most prestigious 100 investors or companies elected in 2011 for the year 2012;
- (iii) Ghana National Association of Land Surveyors;
- (iv) Ghana National Association of Planners;
- (v) Ghana Bar Association;
- (vi) Ghana Real Estate Developers Association; and
- (vii) Consultants engaged in LAP activities.

Apart from GhiS that provided a comprehensive and a well organised membership list with office locations, addresses and contact numbers, the other sampling frames contained only the names and mobile telephone numbers and so one could not easily tell whether a respondent is within Accra the study area or not. This necessitated the use of convenience sampling as well. In all, the sampling was done by selecting every 3rd name in the list. The first sampling was done by lottery technique, which involves writing down 1,2,3,4, and 5 on pieces of papers and balloting to pick one of them as the starting point (Abdulai, 2010).

6.9 PRETESTING THE QUESTIONNAIRE

The Likert scale questionnaire developed was pretested to validate the content of the questionnaire and to select the appropriate and efficient items on the scale for a final study (Dawis, 1987; Haynes *et al.*, 1995; Crosasmun and Ostron, 2011). Content validity of a scale is explained by Haynes *et al.* (1995) as the degree to which elements such as individual items, response format and instructions are relevant to and representative of the target construct of a pending assessment purpose. To achieve this Haynes *et al.* (1995) suggest that content validity of the questions can be assessed by experts and persons from the target population of the study. Generally this is done before administering the questionnaire. As relevant to the study, content validity of the

questionnaire was subjected to random pilot test among experts. This included two real estate practicing professionals and two land administrators of the rank of Chief Lands Officers. These officers happened to be the immediate past and present Divisional Directors of the PVLMD of the Lands Commission who also have the requisite background knowledge about the research problem as well.

Non-experts included ten sampled land information users. The rationale for including non-experts in the pretext is because, piloting a questionnaire according to Dawis (1987, p. 482) enables verification of the following:

- (a) How easily the scale construction can be followed;
- (b) How well the scale format functions;
- (c) How long respondents take to complete the scale; and
- (d) How appropriate the scale items are for the target population.

Testing the questionnaire resulted in removing technical jargons in questions and scale responses, ensuring clarity of response statements and provided an idea about average time to complete the questionnaire. It also resulted in providing a range of figures to guide responses to the willingness to pay as during the trial most respondents were redirecting questions back to the researcher about what amount they should quote for willingness to pay for improved information. It also, resulted in identifying four broad categories of respondents in advance as individual and corporate users both labelled as external raters, staff of the Lands Commission labelled later as internal raters, and non-users who were not the real applicants and neither agents but came to present information search application or collect a search report on behalf of an applicant. This category was labelled as intermediary respondents.

6.9.1 Data Screening

Responses, from all 477 respondents were first entered in Microsoft Excel to enable data management including screening and export to other statistical software including the R software. With a pre-coded questionnaire, the data screening took the form of running the maximum, minimum, mean, median, and modal score for each case. Running the maximum and minimum scores for each case enabled the researcher to detect whether a score less than one such as zero or more than five has been wrongly entered. This is because; the Likert scale ratings ranged between 1 for “strongly disagree” to 5 for “strongly agree”. The mean, median, and mode were used as a central tendency measure for the interrater agreement analysis. Standard deviations and standard errors were equally calculated as measures of dispersion.

6.9.2 Interrater Agreement Index

As relevant to this study, interrater agreement refers to the consensus in opinion among respondents in rating particular response statement on a 5-point Likert scale. Considering that two broad tests on interrater agreement can be identified in the literature as Interrater Agreement Index r_{wg} and $r_{wg(j)}$ and Average Deviation Index AD and $AD_{M(j)}$ (James *et al.*, 1993; Burke *et al.*, 1999; Bliese, 2000; Tuuli, 2009), the r_{wg} is used because the agreement calculated is based on the mean score of each item rated in the questionnaire used in the study. It is anticipated that the inter-rater agreement as an alternative theoretical approach proposed by James *et al.* (1984) to treat any inherent biases in the rating responses is applicable to all calculations done.

All calculations for Interrater Agreement Index r_{wg} was done running an R software package which is available for free under the terms of Free Software Foundation’s GNU General Public Licence. This software has been used and recommended by Tuuli (2009) and Manu (2012). Hence, to justify consistency in rating among raters, results from both

r_{wg} from an R software package was relied on in the analyses of interrater agreements of the responses from the survey.

6.10 STATISTICAL DATA ANALYSIS

Hypothesis Testing

The hypothesis verified in the study is as follows:

H₁ Utilisation of economic knowledge makes competition a better alternative method for supply of land information than monopoly.

Multinomial Logistic Regression Analysis

This study used multinomial logistic regression to predict the willingness of potential PSLIS to compete in land information harnessing given that they possess economic knowledge (predictor variables). Using a multinomial logistic regression to predict the probability that observation i has outcome k , it this is expressed using the formula below:

$$\Pr(C) = \frac{\exp(X_i B_c)}{\sum_c \exp(X_i B_c)}$$

$P(C)$ = Probability (competition in land information harnessing | M, A, I, and E)

i = willingness to compete which is expected to have number of k outcomes as shown below.

1.0 = YES

2.0 = DON'T KNOW

3.0 = NO

The analytical technique, therefore, developed two comparisons for the dependent variable (YES vs. NO, and YES vs. DON'T KNOW). A set of coefficients was generated for the two comparisons and use for interpretation.

The explanatory/independent variables considered for the analysis are:

X_{1t} = Market Knowledge (MKTK)

X_{2t} = Adaptive Knowledge (ADATK)

X_{3t} = Effectiveness Knowledge (EFFKTK)

X_{4t} = Efficiency Knowledge (EFFCK)

Thus, the study used multinomial logistic regression model (MLRM) to predict the likelihood of potential private sector land information suppliers competing in harnessing land information given that they possess relevant practical knowledge (predictor variables). The model is based on sample data of self-report rating responses by potential land information suppliers to verify ETK propounded by Hayek (1945). The model is based on standard multinomial logistic regression formula as $\text{Prob}(C) = \exp(x_i\beta_c) / \sum_c \exp(x_i\beta_c)$ where, $\text{Prob}(C)$ is the probability of belonging to outcome group of to compete, not to compete, and don't know whereas x_i is the vector of predictor variables and β_c are the coefficients estimated using the maximum likelihood estimation.

6.11. ETHICAL ISSUES

Ethical issues raise key concerns in every research (Creswell, 2009). In line with this, the customs and cultural context of the respondents and requirements of the University of Wolverhampton as a reputable institution were taken into account. First, the research questionnaire was developed in consultation with the Director of Studies and subjected to the approval of Research Ethics Committee of the University of Wolverhampton. The questionnaire was designed to seek the subjective opinion of the respondents in relation harnessing of land information. Where information about respondents such as age and educational background were requested, the rationale for seeking such information was provided that such data was needed for purposes of descriptive analysis of respondents. (see Appendices 2, 3 and 4).

Anonymity of respondents and confidentiality of responses were upheld. No tape recorder was used and respondents were also given the option not to answer any question deemed personal and sensitive. Also, respondents could decline from participating in the research at any point in time. Samples of the introductory letter to respondents and questionnaire are provided as Appendices 1A and 1B. The staff of PVLMD and field assistants who administered the questionnaires had induction on ethical issues of the research process. Hence, data collection was conducted with well-informed assistants.

6.12 LIMITATIONS

The study is constrained by some major limitations. First, the study largely depended on self-report nature of potential land information suppliers' responses on the degree to which they possess relevant knowledge required in competition. This implies that failure on the part of respondents to offer candid responses may undermine the results. Nevertheless, an attempt was made in the questionnaire to solicit for candid responses from all respondents. In addition, the R software package used which performs 10000 simulation runs for various ratings was expected to help minimise this limitation.

Secondly, sampling was done by relying on real estate related practitioners membership lists and this implies that some potential private sector entrepreneurs who do not belong to this fraternity from which the respondents were selected were excluded from the study. This is notwithstanding efforts were made to sample some respondents from the 2012 membership list of Ghana Club 100, which provided a multi-organisational list of the first 100 companies, institutions, and individual business persons that excelled in businesses in the year 2011. Thirdly, cost in terms of finance to support the data collection process was a huge constraint on the study, albeit the researcher and the field

assistants did their best to collect as much data within the limited resources and time constraints to ensure the robustness of the study and results obtained.

6.13 SUMMARY

This chapter has demonstrated how the research was designed and executed. Having, reviewed literature on the philosophical underpinnings of the three research approaches, quantitative research approach was considered as the most appropriate research design. This was in line with the aim and objectives of the study. Hence, the research strategy, data collection technique, sampling and analysis were all adopted in line with the positivist approach. Equally, measures were taken to minimise any bias in the research process. Ethical considerations were recognised and respected. Express approval was obtained from institutions from which secondary data was sourced. Having provided the backdrop the research design, the stage is set for analysis and discussion of results in succeeding chapters.

CHAPTER SEVEN

MARKET PARTICIPANTS AND STATE OF THE UREM: DATA PRESENTATION, ANALYSIS, AND DISCUSSION

7.0 INTRODUCTION

This chapter contributes partly in addressing the fourth and fifth research objectives. This chapter contributes to achieving the fifth objective of the study. The chapter consists of three parts, which are cross referenced in succeeding chapters. First, the chapter reports on relevant descriptive statistics of all the three main categories of research respondents involved in the study and the likely implications of analysis of characteristics of respondents for future policy and studies. Second, the chapter reports on landed property owners' responses as one of the key stakeholders in any future land information harnessing policy implementation. Third and finally, the chapter discusses trends observed from secondary data to give an indication of aspects of the state of the UREM in Ghana.

7.1 DESCRIPTIVE STATISTICS OF RESPONDENTS

The entire research covered 477 respondents who answered research questionnaires administered. Three main groups of respondents were involved and these are land information users (LIUs), landed property owners (LPOs), and potential private sector land information suppliers (PSLIS). The breakdown is necessary in order to know who the beneficiaries of the present system are and who is likely to benefit directly or indirectly from future land information service delivery. Also, each of the respondent group is explained relative to the time of data collection as follows.

Information users are consumers of the land information searches services rendered by the land administration bureau at a fee. Also, it refers to staff within the bureau that use the information produced by the bureau in the course of their duty or for personal use at

a fee. The information user group is broken down into three different categories as external users, potential users, and internal users. This breakdown was informed by the pilot study test of the data collection instrument (see Section 6.9).

External user refers to a person either as individual or a representative of an organisation who has requested for the information as an outsider client of the land administration bureau. An internal user is a member of staff of the bureau who was sampled using the service in the process of questionnaire administration. A potential user refers to an individual who is using the service on behalf of a third person who intends to use the information. Although this group of respondents are not beneficiary users of the information, it is anticipated that such persons can become users of the information in the future. Altogether, the three categories of users are referred to as LIUs in subsequent discussions.

Landed property owners refer to customary land owners and suppliers, individual who own landed property and read estate developers. Suppliers of information include private sector persons who have the potential of harnessing land information but for the constraints imposed by monopoly. Table 7.1 provides a breakdown of the respondents.

Table 7. 1: Disaggregation of research respondents

Item	Respondents category	Total Number	Percentage (%)
1	External Users	167	35.0
2	Potential Users	20	4.2
3	Internal Users	74	15.5
4	Suppliers	102	21.4
5	Land and Property Owners	114	23.9
TOTAL		477	100.0

From Table 7.1, all land information user respondents, which includes external, internal, and non-users add up to 261 respondents. This represents 54.2% of respondents. Land information suppliers constitute 21.4% whilst landed property owners make up 23.9%

of the respondents. Table 7.2 next provides further breakdown of gender disaggregation of respondents to show approximately the degree of participation in the land information market by both male and females in UREMs.

7.1.1 Gender Disaggregation of Research Respondents

The gender disaggregation is essential for ascertaining whether there is gender equity in access to the land information service rendered by the land agency. Already, land registration systems and the associated land information systems are reported not to be user friendly, particularly, to female (De Zeeuw, 1997; Augustinus, 2003). Also, gender issues now form part of development policy indicators as well as who are the likely beneficiaries of policy interventions. The World Bank's support for promoting efficient land markets in developing countries, for example, equally seek to promote policies and laws that are gender responsive (Holstein, 1996; Mitchell *et al.*, 2008). Thus, the gender segregation descriptive statistics points out roughly the degree of participation in the land information market by both male and females. A total of 336 males representing 70% of the total respondents as against 141 females, which represents 30% participated in the study. Table 7.2 shows further details.

Table 7.2: Gender disaggregation by category of research respondents

Respondents	Male	Female	Total
External Users	121 (72.5%)	46 (27.5%)	167 (100%)
Intermediary Users	13 (65.0%)	7 (35.0%)	20 (100%)
Internal Users	52 (70.3%)	22 (29.7%)	74 (100%)
Suppliers	87 (85.3%)	15 (14.7%)	102 (100%)
Land and Property Owners	63 (55.3%)	51 (44.7%)	114 (100%)
TOTAL	336 (70.4%)	141 (29.6%)	477 (100%)

Table 7.2 clearly shows that demand for land information is indeed male dominated. This outcome can serve as a reference point for future studies on land information access and use in Ghana, and possibly other developing countries including SSA

countries. Otherwise, one is likely to come to a conclusion that the present land policy and the monopolised land information regime have not promoted enough gender access to land information. However, in terms of landed property ownership, the percentage ratio of male and female ownership combined is 23:17, which suggests that out of every 40 units of landed property, 23 are owned by men and 17 by women. Albeit this suggests the UREM in Accra is male dominated, it may also imply that women who are able to afford have access to the markets to own landed property. In the next section, Table 7.3 shows the educational levels of real estate market land information users.

7.1.2 Educational Level Disaggregation of Research Respondents

Descriptive statistics on educational level of respondents first, may provide an idea of how informed the respondents are, their ability to understand the questionnaire and to provide candid responses. Second, it may imply the likelihood of land information users' ability to understand the contents and implications of the land information obtained from the land administration bureau. Britz (1999) asserts that the level of literacy in terms of illiterate or semi illiterate persons tend to be excluded from access to information, especially, when the information is text-based. This is also likely to happen when the information is verbose.

Table 7.3 reveals that 380 out of the 477 respondents are educated, at least up to the tertiary level. This comprises 335 university level graduates representing 71% and 55 polytechnic level graduates representing 12% of the total respondents. Twenty-eight respondents representing 5.9% have post-secondary education, which includes "A" level certificate holders, nursing and teaching training certificate holders and analogous qualifications. Respondents with technical and secondary school level of education includes "O" level certificate holders, Senior Secondary School graduates and

vocational school training qualifications all totalling 54 respondents and represents 11% of the respondents. Table 7.3 provides breakdown as follows.

Table 7.3: Educational level disaggregation by category of respondents

Category of Respondents	Educational Level						
	None	Primary	Middle/Junior	Tech/Sec. Sch.	Post-Sec.	Polytechnic	University
External	-	1	-	4	9	27	126
Intermediary	-	-	1	1	-	6	12
Internal	-	-	-	4	5	10	55
Suppliers	-	-	-	1	-	4	97
Land Owners	15	1	12	14	14	8	45
TOTAL	15	2	13	24	28	55	335
% TOTAL	3.2%	0.4%	2.8%	5.0%	5.9%	11.7%	71.0%

The descriptive statistics of the educational level of land information users appears to suggest that the land information service is largely accessed by the literates. Indeed, the output in Table 7.3 suggests that the illiterates are probably not directly having access to the information since those with basic education such as primary and junior secondary school constitute less than 1% of the respondents, which is two out of 261 respondents. Thus, this descriptive feature about existing land information consumers' educational level converge with the general assertion by Britz (1999) that the level of literacy is a factor to access to information.

Regarding suppliers, 97 out of 102 respondents representing 95% possessed at least first degree qualification whereas four representing 4% had polytechnic qualification. Putting both together implies that 101 respondents representing approximately 99% have tertiary educational background. First, this may imply that respondents understood and appreciated the essence of the study and, therefore, offered candid responses on the

rated items. Second, this may imply that potential land information suppliers are likely to, in a more innovative way facilitate the understanding of information supplied to illiterate customers who might be attracted to their services.

7.1.3 Age Disaggregation of Research Respondents

First of all, it must be mentioned here that age as interval measure can be analysed using inferential statistics. However, since the main reason for capturing this attribute is purposely for descriptive statistics, such inferential analysis appears not necessary. Thus, the descriptive statistics on age brackets of respondents is captured to provide an idea about the age groups that patronise the land information search service. The age structure considered focuses on land information users and landed property owners. Starting with 18 years as the age of adulthood in Ghana, and also the legal age for binding contractual obligations, Table 7.4 provides the breakdown of the age of the respondents.

Table 7.4: Age disaggregation of land information users

Category of Respondents	Respondents age in Years						TOTAL
	18-27	28-37	38-47	48-57	58-67	+67	
Individual Users	28	36	22	25	3	-	114
Intermediary Users	4	9	5	2	-	-	20
External Users	6	27	14	25	2	-	74
TOTAL	38	72	41	52	5	-	208

Table 7.4 depicts that land information service users are mainly within the age range of 18 and 57 years. This may imply that the service is either first, not accessed by those who are about to retire from active service at the age of 60 and beyond, or the service is indirectly being accessed by those above 58 years through the younger ones. Two hundred and three land information user respondents out of the 208, which represents

about 98% reported in Table 7.4 above falls within 18 and 57 year range whereas 2% falls exactly within the 58 to 67 age group. No respondent was recorded for above 67 year group. This outcome possibly suggests that the land information market is not patronised by those who have retired from service as well as the elderly.

The likely implication of age attribute of respondents to the research is that, the respondents can be considered as relatively young and active land information users. In conclusion, the descriptive statistics of gender, educational level, and age provided may serve as benchmarks for future studies on land information users. Discussions in the next section focus on analysis of LPOs responses.

7.2 APPLICATION OF INTER-RATER AGREEMENT INDICES

This section analyses the rating opinions of research respondents is analysed. The mean, median and mode ratings reported in the analysis are based on responses to statements posed with a 5-point Likert scale response options of 1=Strongly Disagree, 2=Disagree, 3=Neither Agree or Disagree, 4=Agree, and 5=Strongly Agree. The ratings are analysed using r_{WG} , which is a single-item inter-rater agreement index (see Chapter Six for the theoretical explanation of r_{WG}). The r_{WG} indices are based on first, a uniform null distribution and second, a 10,000 simulation runs. The 10,000 simulation by the R software are preformed over the respondents' group size (see Appendices 6).

LPOs, r_{WG} values of 0.13 and 0.18 are the 95% and 99% confidence interval estimates respectively for group size of 114 sample respondents. Generally, the study reports at 99% confidence interval and the decision criteria is that a calculated r_{WG} value greater than 0.18, makes the rating result significant. The results are subjective ratings of sampled LPOs. The ratings are based on LPOs experiences be it personal or vicarious experiences of others on the following:

- (i) Whether they are informed about the relevant land information potential land buyers seek before taking decision to acquire land in UREMs;
- (ii) Degree to which they are willing to offer relevant information to a public sector land administration agency (PSLAA) or a private sector land information supplier (PSLIS); and
- (iii) What is their perception about whether PSLIS can harness land information required in UREMs better than PSLA.

The salient findings are presented whilst the general respond trends.

Table 7.5 below shows a summary of the descriptive statistics of 114 rating responses from LPOs sampled from Gbawe, Manet Palm Estate, and Tema Community 20 all in Accra, Ghana.

Table 7.5: LPOs opinion on components of all-in-one land information

Awareness about relevant land information required	Mean	Std. Dev.	Std. Error	Med.	Mode	r _{WG}	p <.01
Aware market data information is required	4.0263	0.7810	0.0731	4	4	0.70	0.18
Aware ownership information is required	4.3772	0.7687	0.0720	4.5	5	0.70	
Aware land use information is required	4.2281	0.8312	0.0778	4	4	0.65	
Aware environmental information is required.	4.2368	0.8954	0.0839	4	5	0.60	
Aware public utilities information is required	4.2791	0.7903	0.0740	4	4	0.69	

The mean values are fairly close to the median values for all rated sub-components. The modes also tend to be the same as the median. The small standard deviation relative to the mean in all ratings is an indication that data points are quite close to the mean. The standard errors associated with all the means ratings are also relatively close to zero and this suggests that there is little variability between the sample mean and population mean and, therefore, the sample chosen is likely to be an accurate reflection of the population (Miller, 1984; Field, 2009; Manu, 2012). It is worthy to hint that small

values for both standard deviation and standard errors reported in Table 7.5, appear to run through all the observations made in succeeding analyses. Hence, unless other contrary observation is specifically mentioned, it implies that the sample chosen is likely to be an accurate reflection of the population of LPOs.

First, what the findings from the responses in Table 7.5 depict is that there is a very strong agreement among LOPs that information about ownership of land is the most required information for effective decision making in transactions in UREMs. The median rating score of 4.5 shows that respondents are aware ownership information is required by land purchasers for decision making to acquire land in UREMs (with std. dev. = 0.7687, mean = 4.5772, mode = 5). This represents a consensus among respondents that they “strongly agree” that ownership information is required in UREMs. In Table 7.5, r_{WG} value of 0.70 for the rating exceeds 0.18 at $p < 0.01$. This is evidence of significant agreement among the respondents that they are aware ownership information is required in UREMs.

With regard to land market events, land use, environmental and public amenities information, the median rating score of 4 in Table 7.5 for each of these represents a consensus among LOPs that they “agree” that these sub-components of all-in-one land information are required by purchaser for decision making in UREMs. Also, since r_{WG} values for each of these exceed 0.18 as Table 7.5 shows, it implies that there is significant agreement among the respondents that they are informed these are relevant information required for effective participation in UREMs.

The two distinct categories of results reported above appear to suggest that ascertaining or acquiring information about the reputed owner of a subject landed property of sale is critical for example, in minimising information gaps between a potential seller and buyer. Logically, it is the owner who can offer the other information regarding the

remaining sub-components of all-in-one information required if such information is not easily accessible from an independent third party, which is the public sector land bureau. Apart from this, the prospective buyer would have to do further due diligence, which adds to the transaction cost and increases uncertainty possibly about other latent physical attributes of the landed property. Hence, it makes the market not to be efficient due to information gaps between individuals who want to engage in mutual exchanges. Regarding what relevant information LPOs are likely to offer to minimise these challenges, the next section presents the results from the responses.

Succeeding discussions follow a pattern similar to discussions presented above. This is because results in Table 7.6 that follows lend themselves to two categories of reporting. These are “strongly agree” and “agree” categories of responses.

Table 7.6: LPOs willingness to offer all-in-one land information

Willingness to offer all-in-one land information	Mean	Std. Dev.	Std. Error	Med.	Mode	r _{WG}	p < .01
Transaction information	4.3421	0.8396	0.0785	5	5	0.65	0.18
Ownership information	4.3421	0.7266	0.0681	4	4	0.74	
Land use information	4.2807	0.7348	0.0688	4	4	0.73	
Environmental information	4.2894	0.6823	0.0639	4	4	0.77	
Utilities information	4.3070	0.6258	0.0621	4	4	0.80	

First, Table 7.6 above shows LPOs willingness to offer transaction events information to an information supplier with a median rating score of 5 (with mean = 4.3421, std. dev. = 0.8396, mode = 5). This score represents a consensus that the respondents “strongly agree” that they are willing to provide information on landed property transactions if there is the need for gathering such information. This result can be interpreted with confidence because the r_{WG} value of 0.65 exceeds 0.18 at p < 0.01. Thus, there is evidence of significant agreement among LPOs that they “strongly

agree’’ to provide information on market transactions they are likely to engage in to an organisation that requires such information.

Second, from Table 7.6, LPOs’ median rating of 4 for willingness to provide ownership information (with mean = 4.3421, std. dev. = 0.7266, mode = 4) and willingness to provide land use information (with mean = 4.2807, std. dev. = 0.7348, mode = 4) represents consensus that respondents “agree” they are willing to provide these sub-sets of information when required. Also, the median rating of 4 for willingness to provide environmental information (with mean = 4.2894, std. dev. = 0.6823, mode = 4) and willingness to offer utilities information (with mean = 4.3070, std. dev. = 0.6258, mode = 4) represent consensus among LPOs that they “agree” to offer each of this information. Hence, r_{WG} values of 0.65, 0.74, 0.73, and 0.77 as well as 0.80 correspondingly exceed 0.18 at $p < 0.01$ and these provide evidence of significant agreement among the LPOs responses that irrespective of the supplier, they agree to provide these sub-components of land information when the need arises.

First, in Table 7.5, the result suggests that there is consensus that LPOs “strongly agree” they are aware ownership information is required in UREMs transactions. Following this, LPOs equally “strongly agree” they are willing to provide market transaction data towards an efficient information management regime. This result refutes a long held belief that real estate transactions are often held in secrecy, which contributes to paucity of market data in Ghana.

Secondly, the outcome of LPOs responses probably suggests that under a regime of healthy land information flow and use, landed property owners are likely to be incentivised to offer information, which can enable genuine or fraudulent landed property owners to be known in the market. Most likely, this can facilitate easy access

to UREMs. If this is so, then the question that comes up is who can best incentivise LPOs to offer this information and what is the most appropriate approach to this task?

Against the backdrop that land transactions are often carried in secrecy, LOPs opinion as stakeholders in an improved land information management regime was solicited and the outcome is as follows. Table 7.7 confirms LPOs are in agreement to offer information required to bring information symmetry in UREM irrespective of whether it is PSLAA or PSLIS that is harnessing the information.

Table 7.7: LPOs willingness to offer land information to PSLAA and PSLIS

Willingness to offer land information to:	Mean	Std. Dev.	Std. Error	Med.	Mode	r_{WG}	$p < .01$
Public sector land agency	4.2193	0.8901	0.0834	4	4	0.60	0.18
Private sector supplier	4.1140	0.9290	0.0870	4	4	0.57	

The median rating score of 4 for willingness to provide information represents a consensus that the LPOs “agree” that they are willing to provide such information on their landed property to either PSLA or PLIS. These results can be interpreted with confidence with r_{WG} values of 0.60 and 0.57 that both exceed 0.18 at $p < 0.01$ and provide significant evidence of agreement among respondents. The result may imply that when the private sector is given an opportunity to harness land information in UREMs, LPOs are likely to cooperate with them all things being equal. The likely arrangement under which this may happen is shown by results in Table 7.8 that follows next.

Table 7.7 provides ratings results on LPOs perception about the method to adopt to enable healthy harnessing and flow of land information in UREMs in Ghana.

Table 7.8: LPOs rating on method of land information supply

Perception about method of land information supply	Mean	Std. Dev.	Std. Error	Med.	Mode	r _{WG}	p <.01
Restructuring of PSLAA	3.9737	0.9148	0.0863	4	4	0.56	0.18
Public-Private Partnership (PPP)	4.2719	0.9148	0.0857	4	5	0.58	
Management services by PSLIS	3.3771	1.2178	0.118	4	4	0.21	
Outsourcing specific services	4.0263	0.9908	0.0928	4	4	0.51	
Privatisation	2.8158	1.3989	0.1310	2	2	0.02	

The median score of 4 for restructuring of PSLAAs, PPP, farming out management service, or outsourcing specific services in Table 7.8 suggests that LPOs tend to agree on items rated. The corresponding r_{WG} values of 0.56, 0.58, 0.21, and 0.51 for each rated method exceed 0.18 at $p < 0.01$ and this provides evidence of significant agreement among the LPOs that they “agree” on these methods. The responses give an indication that LPOs are indifferent as to the method to be used and the result is significant.

Regarding the privatisation of information supply, the median rating of 2 in Table 7.8 suggests that LPOs “disagree” with that method. The r_{WG} value of 0.021 for rating on privatisation as a method does not exceed 0.18 at $p < 0.01$. This implies that the disagreement is not significant. This is probably because as the standard deviation of 1.3989 is high relative to the mean of 2.8158, there is high variation in the ratings of the PLOs. Hence, there is no consensus on the ratings on privatisation as a method.

7.3 INFORMATION SUPPLY IN PRE AND POST-MERGER ERAS

Chapter Three of the thesis mentioned that four public sector land administration agencies were restructured in 2008 with the aim of promoting effective and efficient land administration (Section 3.5). Taking full effect in late 2009, 2014 marks the fifth year since the restructuring began. This approach re-entrenches monopolisation of land administration services by state controlled bureaus. Meanwhile, in Chapter Four, ETK

suggests that entrenched monopoly is characterised with low productivity and inefficiency unlike enterprise monopoly and competition (Section 4.11).

Against the above backdrop, succeeding discussions explore secondary data obtained from PVLMD of the Lands Commission between 2007 and 2009, which represents three years prior to the restructuring and data between 2010 and 2012, which also represents three years after the restructuring. The data is used to verify assertions in ETK above in two ways. First, the verification is done by analysing the level of productivity via demand and supply analyses and second, the degree of efficient service delivery by proxy of timely access to land information by the public under both pre and post-merger eras. Using second data in this way enables patterns and trends to be observed and discussed (Abdulai and Owusu-Ansah, 2014)

Also, secondary data is sourced from specialised Units created under the Ghana Police Administration and the Ghana Judicial Service to argue out whether restructuring has not exacerbated the problem of information asymmetry, which is usually mentioned as uncertainty and high litigation costs. If any, this externality is explored for cross referencing and triangulation of results obtained from analysis of primary data in Chapters 8 and 9. The outcomes from the analyses are equally relevant for policy recommendations in Chapter 11.

The present analysis is based on a total of 96,113 requests for land information made through formal applications to the PVLMD between January 2007 and December 2012. These requests for purposes of discussions herein are referred to as demand. Out of the above total number of requests, 69,527 applications representing approximately 72% of applications received were successfully processed and delivered to clients as completed information search reports. These are also referred to as supply in succeeding

discussions. This implies that 69,527 information sets were supplied to the market out of the total of 96,113 demanded.

The above background reveals that there is a shortfall of 26,546 information sets that have not been supplied to the market over the six year period under consideration. This represents about 28% of cases referred to as searches not completed. The shortfall may be considered as 26,546 clients not having access to information required for decision making. Hence, whether the inability of prospective land information users to access information needed for decision making is an occasional event or it is a characteristic of the monopolised land information supply regime is discussed as follows.

Figure 7.1 shows an increasing trend in demand for information since 2007. The demand via 18,650 applications in 2012 represents a cumulative increment of 65.16 percent on that of 12,152 in 2007. From Figure 7.1, the yearly increment over the preceding year are derived as 2008 (16.3%), 2009 (16.28%), 2010 (1.37%), 2011 (8.41%) and 2012 (3.13%). These percentages appear to suggest that pre-merger annual increments in demand are above 16 percent and higher than post-merger increments in demands, which are less than 10 percent. The year 2010 recorded the least annual increment (1.37%) in demand over the six year period under consideration. Similarly, 2010 recorded the least percentage of completed applications (69.73) and also the highest percentage (30.27%) of uncompleted applications.

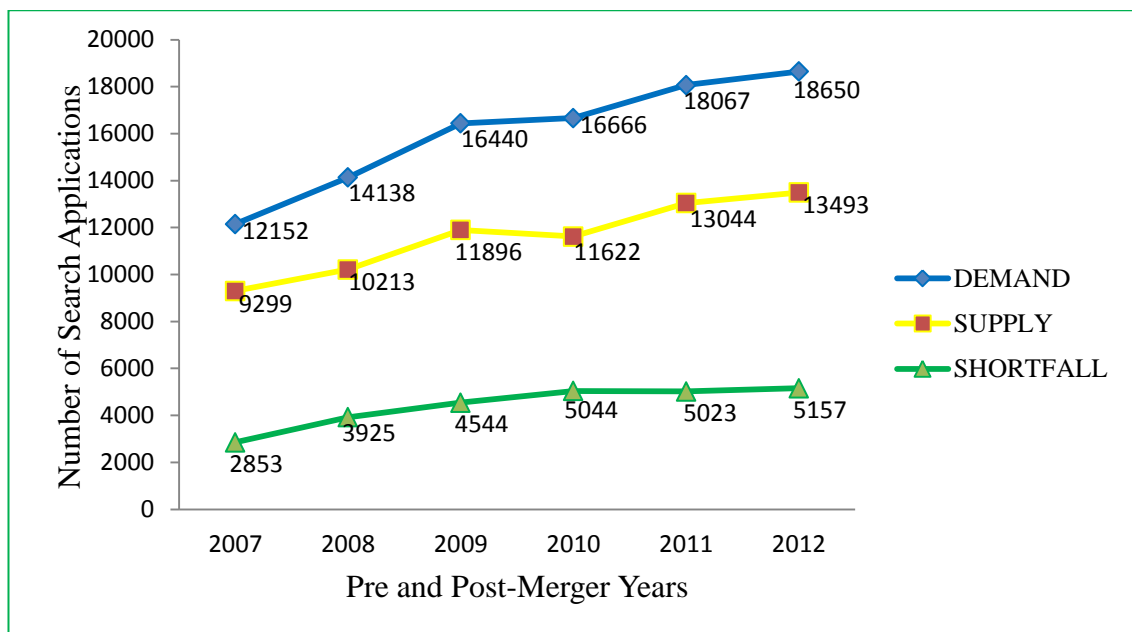


Figure 7. 1: Demand and supply of land information

Data Source: PVLMD Searches Application Ledgers, Accra (2007-2012).

Figure 7.1 shows that demand for information is in excess of supply and this is a consistent pattern. The widening gap after 2009 also suggests that there are challenges with productivity in the post-merger period. Summarily, the annual average supply of land information to the market between 2007 and 2012 is approximately 72% of demand whereas the average annual shortfall in land information supplied over the period is 28%.

The implications of the above percentage shortfall over the period as mentioned earlier is that, 26,546 clients or land information users are technically denied access to relevant land information for decision making and possibly for participation in the market. This shortfall has a potential to fester the problem of information asymmetry in UREMs, which literature now acknowledges is significant in the study area (Barry and Danso, 2014). Thus, this is an indication that the merger of land sector agencies has not yielded significant improvement in volume of land information supplied in response to demand. Subsequent analysis highlights on this further.

Apart from complete denial of access to land information from the state controlled bureau, the quality of access to land information can be determined by the time it takes to access the information in the custody of the bureau (see Section 2.3.1). The focus of the analysis here is, therefore, on completion time for dissemination of land information requested by the public. In this regard, the Lands Commission's Citizen Charter policy launched in 2007 is explored to analyse the differences in quality of access to information under both pre and post-merger periods. The Charter promises that land information search report shall be delivered within ten (10) working days. For purposes of comparison, Table 7.9 shows the time frame within which the comparison is made at intervals of ten working days whilst Table 7.10 shows the sample of applications used for the analysis and discussions.

Table 7.9: Time frames for information dissemination

Weeks	Number of working days
≤ 2 weeks	Between 1 and 10 working days
3-4 weeks	Between 11 and 20 working days
5-6 weeks	Between 21 and 30 working days
7-8 weeks	Between 31 and 40 days
> 8 Weeks	41 working days and beyond

Table 7.10: Percentage of applications sampled for analysis

Year	Searches Received	Searches Completed	Total Sampled	Percentage Sampled (%)
2007	12152	9299	446	4.80
2008	14138	10213	478	4.68
2009	16440	11896	626	5.26
2010	16666	11622	650	5.59
2011	18067	13004	684	5.26
2012	18650	13493	741	5.49
TOTAL	96113	69527	3625	5.21

Data Source: PVLMD Searches Ledgers, Lands Commission, Accra (2007-2012).

7.3.1 Pre-merger Land Information Dissemination Completion Time

Figure 7.2 provides a time series graph, which shows the percentage of cases completed between 2007 and 2009 within number of working days' time frames adopted.

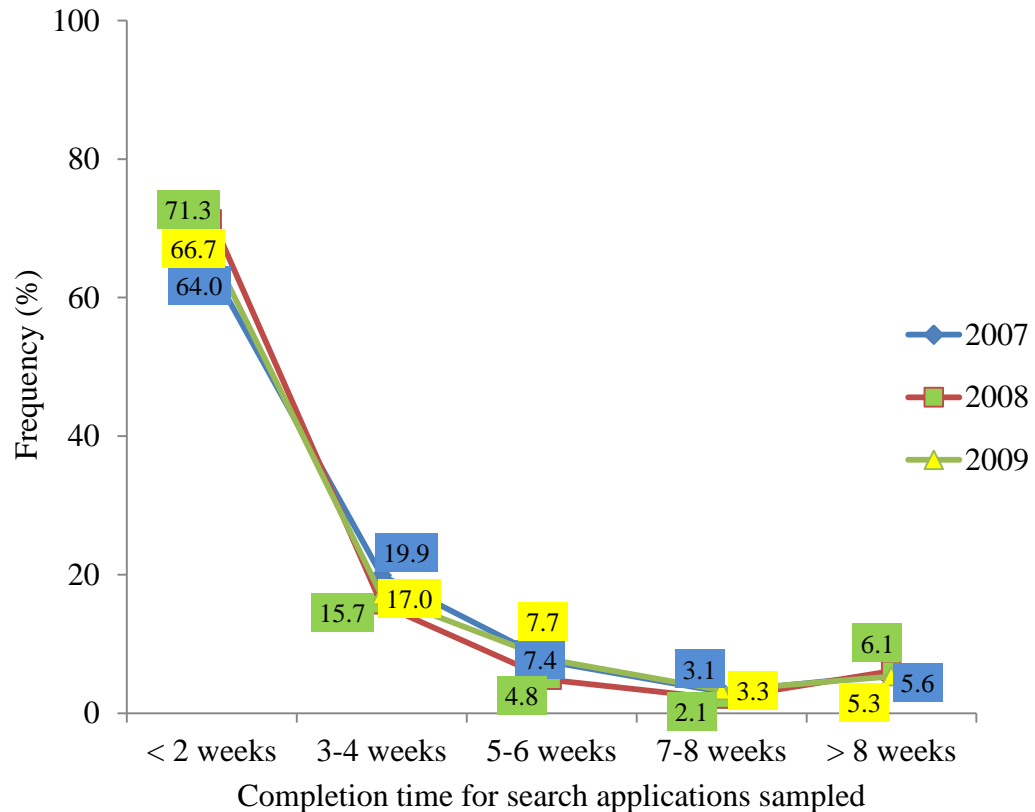


Figure 7. 2: Pre-merger information dissemination time series graph

Using 2007 as the base year, 64% out of the sampled cases in 2007 were completed within a range of 1 and 10 working days. The year 2008 recorded the highest with 71.3% of land information requests processed and completed within 10 working days. There was a drop in 2009 to 66.7%. Also, Figure 7.2 shows that 2008 had the highest number of cases processed within 2 weeks (71.3%) and also, lowest number of cases completed within 3 to 4 weeks (15.7%), 5 to 6 weeks (4.8%), and 7 to 8 weeks (2.1%). This is notwithstanding the fact that it records 6.1%, which is the highest for completion of cases beyond 8 weeks for the pre-merger period considered.

The improvements in 2008, however, could not be sustained in 2009. For instance completion time for searches completed within 10 working days dropped by 4.6% from

71.3% in 2008 to 66.7% in 2009. This reduction arguably led to a percentage increase in number of applications completed beyond ten working days as subsequent observations suggest when green and yellow highlighted boxes are compared. For example, percentage of cases completed within 11 to 20 days (3-4 weeks) increased by 1.3% from 15.7% in 2008 to 17% in 2009 whereas that of within 21 to 30 days (5-6 weeks) increased further by 2.9% from 4.8% in 2008 to 7.7% in 2009. Thus, apart from 2008 that quality of access to information was relatively improved, the situation worsened during the pre-merger era. How this transcends into the post-merger period is analysed as follows.

7.3.2 Post-merger Land Information Dissemination Completion Time

Figure 7.3 depicts land information dissemination after the merger using 2009 as the base year or the comparison.

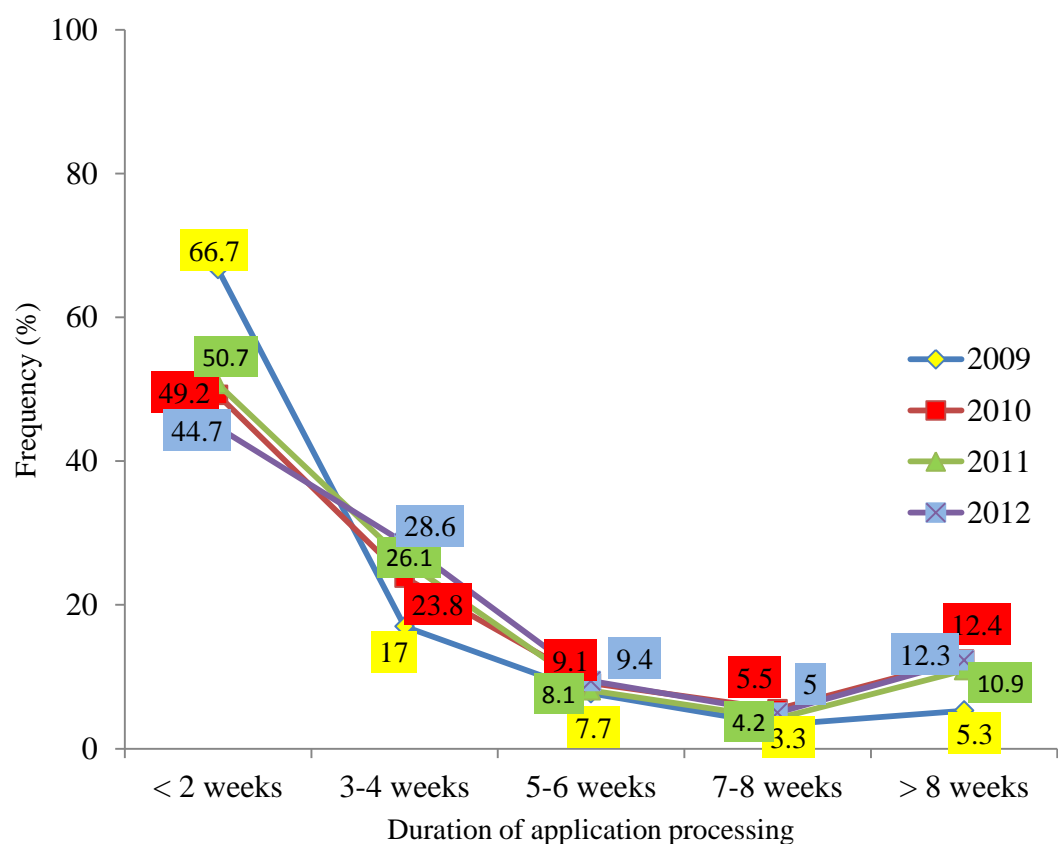


Figure 7.3: Post-merger information dissemination time series graph

Comparing Figures 7.2 and 7.3, it is possible to decipher that quality of access to land information to the public was generally better during the pre-merger period relatively than the post-merger period. For example, out of the sample drawn in each year, 64% of information supplied in 2007 was within 10 working days promised. Approximately in 2008, it was 71% whilst in 2009, it was 67%. However, following the merger, the percentage of information supplied within ten working days in 2010 was 49% compared to 51% in 2011, and finally, 45% in 2012.

Indeed, the discussions so far suggest that restructuring of four public land administration bureaus has consolidated and entrenched the monopoly status of the agencies. The unfolding trend confirms ETK assertion that an entrenched monopoly unlike enterprise monopoly may not be the best for supply of goods and services. The proposition in ETK suggests that if such a monopoly is not an enterprise monopoly, then it must be removed as a barrier for competition to prevail. However, ETK suggest that if the monopoly is an enterprise monopoly, then this would have to give way when competition is due (see Section 4.11).

The trend observed in demand and supply in the preceding analysis converges with the assertion that entrenched monopoly is associated with irresponsible and inadequate flow of land information in UREMs. This has the propensity of unleashing negative externality on UREM participants, the real estate sector, and society in general as social cost (Harberger, 1964; Dahlman, 1979). Data sourced from outside the LC is explored to triangulate this likely effect of entrenched monopoly over supply of land information.

7.4 EXTERNALITIES OF GAPS IN LAND INFORMATION FLOW

The need to mitigate social effects of the challenges in UREMs necessitated the establishment of special units at the Greater Accra Regional Police Administration. Also, through the LAP in Ghana, a Specialised Land Court has been established in the

GAR. It is worthy to mention that the establishment of a court of this nature derives its root from the National Land Policy of Ghana (MLF, 1999) as part of measures to address some of the challenges in the real estate sector. Hence, secondary data obtained from the “Property Fraud Unit” of the Regional Police Criminal Investigation Department (CID) and the Specialised Land Court are succinctly discussed to show the prevalence of symptoms of the problem of information asymmetry in UREM in Accra. The data is discussed against the background of the restructuring of the land sector agencies with effect from late 2009.

7.4.1 Insurgence in Land Related Crime in UREM

Records of the CID at the Greater Accra Regional Headquarters of Ghana Police Administration indicate that the “Property Fraud Unit” (PFU) was set up on 31st March, 2006. The Unit was created for purposes of dealing with fraudulent practices associated, particularly, with sale, leasing and granting of landed properties in the Greater Accra Region. Thus, it was created by the Police Administration in response to the numerous and rampant land disputes and conflicts. Seven categories of cases have been handled since the PFU was set up (Table 7.11).

Table 7.11 shows that the PFU received a total of 7,967 land related cases within 7 years of becoming operational. This implies on the average 1,138 cases in the form of complains are received each year. The feedback mechanism and records verified on the subject file showed that all the reported cases have an originating source and are true.

Table 7.11: Land related cases reported at the CID Headquarters

Year	Fraud	Trespass	Forgery	Causing Harm	Death Threat	Stealing	Assault	TOTAL
2006	148	121	39	0	0	0	0	346
2007	268	480	14	0	14	2	0	866
2008	211	290	17	2	16	8	1	594
2009	396	282	18	0	22	10	1	812
2010	357	742	27	1	16	1	17	1310
2011	444	1201	22	0	45	15	5	1951
2012	424	1408	0	0	20	11	0	2088
TOTAL	2248	4524	137	3	133	47	24	7967

Source: Monthly and Annual Report File, CID Headquarters, Accra (2006-2012).

A critical examination of the reported cases in Table 7.11 shows that out of the 7,967 cases, 2,618 representing about 33% were recorded during a period of four years between 2006 and 2009. This is highlighted in light green colour in Table 7.11. However, a total 5,349 cases representing about 67% were recorded during a period of three years between 2010 and 2012, which is highlighted in deep green. Despite that no statistical relationship is established, Table 7.11 suggests that the 33% of complaints was recorded during the pre-merger regime whilst 67 percent was recorded during the post-merger regime of the LC. Indeed, literature suggests that consideration of secondary data enable identifications of patterns in events.

Premised on the above, a thorough examination of Figure 7.4 gives an indication of some connection that is crucial. For example, trespass, which is unlawful interference and entry into another person's landed property as explained by the PFU, topped the number of cases recorded and represents about 57% of the cases. Fraud, which is the second highest recorded cases, constitutes about 28% of the complaints. These two

categories of recorded cases constitute 85% of complaints received at the PFU and clearly depict patterns in Figure 7.4.

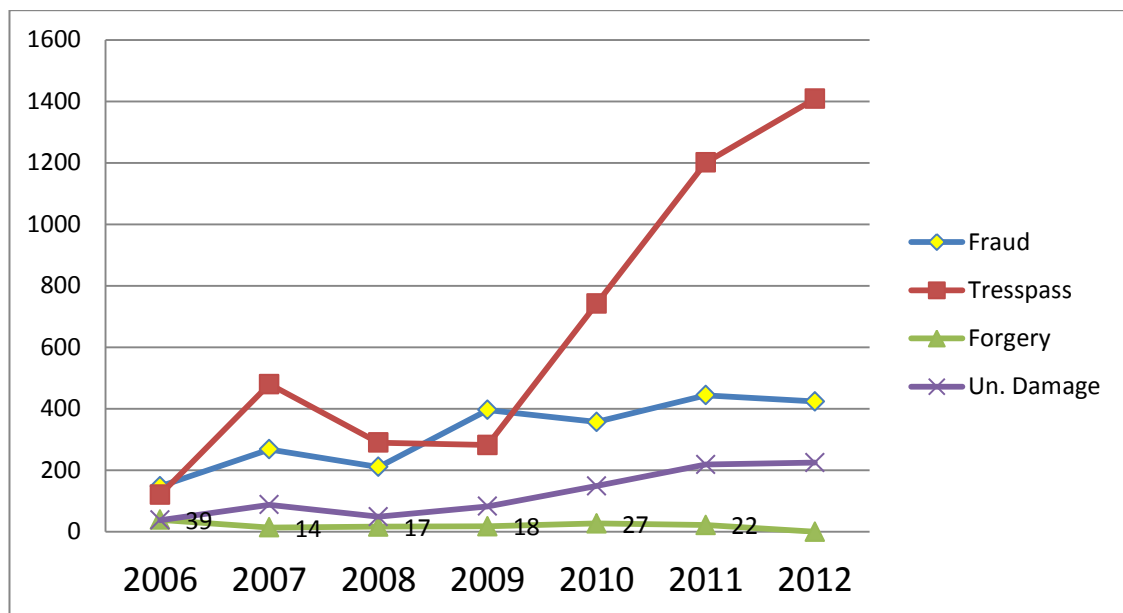


Figure 7.4: Graph of land related crimes recorded at CID Headquarters

Figure 7.4 shows that trespass reached a peak in 2007 and relatively decreased in 2008 and 2009. The decrease happens to coincide with the introduction of the Citizens Charter of the LC in 2007 followed by subsequent improvement in land information supply within ten working days (Section 7.3.1). This was during the pre-merger regime (Figure 7.2). However, from 2010 onwards, fraud related complaints began to increase and these also happen to coincide with the post-merger regime under which land information supply was characterised with more delays than the pre-merger regime (Figure 7.3).

Regardless of the absence of rigorous and statistically established relationship, these coincidences possibly could imply that unhealthy flow in land information after the merger, may be contributing to 103% increase in related crime. This is computed from increase in recorded trespass cases from 33% to 67% during the pre-merger and post-merger regimes respectively. Also, the pattern of fraud cases reported is quite similar to

that of trespass except that this started increasing from 2009 and at lesser increasing yearly rates than trespass. Finally, data obtained from the Specialised Land Court is also examined to indicate uncertainties in the UREMs and, therefore, the need for responsive land information harnessing in UREMs in Ghana.

7.4.2 Rising Land Related Disputes and Claims

In order to facilitate the speedy processing of cases in Ghana, four Specialised High Courts were set up by Judicial Service of Ghana. These include the Land Court, Human Rights Court, Industrial and Labour High Court, and the Economic Crime High Court. The operations of these Courts began in 2008 and as relevant to this study, focus was on the Land Court where data on cases handled by this Specialised Court with powers of a High Court was accessed. Table 7.12 displays the data collected and discussion.

Table 7.12: Land cases filed at the Specialised Land Court

Year	Stool Land	Family Land	Investment Related Land	Total
2008	3	18	143	164
2009	18	13	581	612
2010	56	341	515	912
2011	69	917	28	1014
2012	80	954	94	1128
TOTAL	226	2243	1361	3830

Source: Land/Financial High Court Case Register Ledger, Accra (2008-2012).

Table 7.12 depicts trends in stool land and family land cases as well as investment related cases. Initially, these cases, especially, investment related cases were pending at other High Courts and were transferred to the Specialised Court. Although both stool and family land cases were also transferred, an explanation was given that this is not source of the consistent increase in family land cases.

Intuitively, family land cases raise a lot of concern for land administration. This is because of the pronounced trend in litigation on family land, which is on the increase since 2010. An attempt can, therefore, be made to compare the period within which these rapid increases are taking place and the post-merger regime of the LC. A further link in increasing number of litigation over family lands and the increasing numbers of reported land cases at the PFU between 2010 and 2012 is equally possible. This is because in the midst of the information gaps and distortions, the likelihood that opposing family heads or chiefs would be selling the same parcel of land to different parties is inevitable. This practice has been reported in the literature. Again, the increasing numbers in stool and family lands disputes started rising from 2010, which is the immediate year following the merger.

7.5 DISCUSSION OF FINDINGS

The study has identified that LPOs are aware that UREM participants require all-in-one land information in order to effectively participate in the market. First, this converges with findings of Antwi and Adams (2003) that LPOs in Accra factor all-in-one land information into land prices. This finding of the study, however, suggests that LPOs are of the view that information about land ownership is the essential component of all-in-one land information required by UREM participants. Secondly, the study finds that LOPSs are indifferent to providing all-in-one land information to either PSLISs or PSLAAs. There is, however, no consensus on complete privatisation of the role of landed property information harnessing. This appears to suggest that the non-interventionist LIS model is likely not to function well in UREMs in Ghana.

Findings based on the secondary data analysed appear to suggest that land information service delivery under the entrenched monopoly regime of PSLAAs has not improved following the implementation of a policy of merging four land sector agencies. This

result appears, for example, to converge with Hammond (2008) that the land registry is contrary to expectation delivering insignificant results in service delivery. This implies that an alternative viable option of harnessing land information may be considered. Similarly, findings based on the analysis of secondary data obtained from the CID Headquarters and Specialised Land Court on landed property related crimes and disputes respectively suggest that the symptoms of information asymmetry in UREM in Accra is rife. This is consistent with Barry and Danso (2014) that information asymmetry is significant in the UREM of Accra. Thus, the current approach adopted to tackle information asymmetry is yielding insignificant results.

7.6 SUMMARY OF CHAPTER

This chapter, apart from providing descriptive statistics of research respondents also, lays the foundation for triangulation of findings in subsequent chapters. It has also provided LPOs owners input into the framework expected at the end of this research. Demonstrably, it has shown that the UREM is the type predominantly patronised by market participants with degree holding graduates and middle income to high income salaried workers. This converges with literature and either suggests that less of the poor in society or low income earners use the formal channel to access the market. May be, this justifies the need for competition in other to promote easy access to relevant information to enable broad based access to the market. Gender access to information is skewed in favour of males. However, with landed property ownership, the percentage of female respondent is quite encouraging in view of efforts to promote equal access to landed property in the country.

LPOs have also through the responses to data collection instrument communicated their knowledge about the kind of information required for an informed participation in UREMs. They have also expressed their willingness to volunteer such information if it

is needed since everyone tend to benefit from transparency in the market. More importantly, LPOs have indicated that their willingness to volunteer relevant information that needs to be harnessed whether such task is to be executed by private or public sector agency. This appears as a goodwill signal for future competition if that is to happen. LPOs are, however, against complete privatization of land information services.

Finally, secondary data was explored to verify whether land information flow has improved as envisaged under the restructuring of four PSLAAs. The trends emerging suggest that information asymmetry related challenges in terms of litigation and uncertainty in UREMs is persisting. Also, the monopolisation of land information supply, which has been entrenched with the merger of four land sector agencies, appears to be undermining the speed and volume of land information supplied to the market. The study finds no significant improvement in the percentage change in demand for the information. Likewise, there appears to be no improvement in speed and volume of land information processed. The findings converge with ETK that entrenched monopoly may not be the best method for supply of goods and services. Symptoms of information asymmetry are still pervasive.

CHAPTER EIGHT

PRESENTATION OF LAND INFORMATION USERS' DATA, ANALYSIS AND DISCUSSION

8.1 INTRODUCTION

The fifth research objective is to determine the relevant land information and how it is required to enable information symmetry prevail in UREMs. This Chapter therefore, focuses on land information users by presenting reports and analyses of responses from primary data collected from the study area to verify whether demand side theoretical propositions of ETK is applicable to UREMs in Ghana. Since the Chapter is equally aimed at contributing to building a framework by the end of the study, the kind of land information that respondents consider as all-encompassing information and perception of respondents about competition in information service delivery are investigated. The chapter further reports on LIUs expression of willingness to pay for relevant information required to bring information symmetry to UREMs.

8.2 APPLICATION OF INTER-RATER AGREEMENT INDICES

Analysis of rating opinions of land information users is based on the assumption that the respondents are risk averse and know what they require as well as who they trust can deliver on their requirements. With this underlying assumption, mean, median and mode ratings reported in this Chapter are based on responses to statements posed with a 5-point Likert scale response options of 1=Strongly Disagree, 2=Disagree, 3=Neither Agree or Disagree, 4=Agree, and 5=Strongly Agree. The ratings are analysed using r_{WG} , which is a single-item inter-rater agreement index.

Three broad categories of respondents are considered in the analyses and reporting. These are categories of respondents labelled as External Users, Internal Users and Intermediary Users. All three categories of information users are labelled as All Users,

which also refers to LIUs. Appendix 6 shows computation of r_{WG} values by the R software for all the categories of users mentioned above.

First, r_{WG} values of 0.11 and 0.15 are the 95% and 99% confidence interval estimates respectively for the group size of 167 respondents representing the sub-sample of respondents labelled as External Users. Second, r_{WG} values of 0.16 and 0.23 are the 95% and 99% confidence interval estimates respectively for the group size of 74 respondents representing the sub-sample labelled as Internal Users. Third, r_{WG} values of 0.34 and 0.46 are the 95% and 99% confidence interval estimates respectively for the group size of 20 respondents representing the sub-sample labelled as Intermediary Users. Fourth and finally, r_{WG} values of 0.08 and 0.12 are the 95% and 99% confidence interval estimates respectively for the group size of 261 respondents and this represents the total responses of all the three group sizes, which is labelled as All Users. Generally, the study reports at 99% confidence interval except in few cases where it is at 95% confidence interval.

The responses are subjective ratings of sampled land information users taken to find out on the basis of their land information search experiences:

- (i) What kind of information is required to enable information symmetry prevail in UREMs? This is addressed in Sections 8.3 to 8.7;
- (ii) Perception about whether private sector land information suppliers can harness land information required in UREMs better than public land administration bureaus, which is addressed in Sections 8.9 to 8.10; and
- (iii) Relationship between demand and price for information required to tackle information asymmetry in UREMs. This is dealt with in Section 8.11.

8.3 INFORMATION ON MARKET EVENTS

Market event information considered in the study has six components. These include:

- (i) information on properties available for transactions in the market;
- (ii) interests in the properties available for transaction;
- (iii) values of past and pending transactions;
- (iv) property rates payable on properties;
- (v) dimensions of landed property available for transaction; and
- (vi) social amenities available in locations of landed property preferred.

Analysis and results of rating responses on each of above sub-components are presented according to the category of respondents. However, for purposes of first, highlighting peculiar trends in responses across all categories of information users for policy implications and second, word limitation requirements for the PhD study, not all responses are discussed in text. A third reason is not to break the coherence of the analysis and discussions. Finally, since the responses hinge on expression of needs, it would appear proper to report on the salient information needs. Nevertheless, quality of the analysis and discussions has not been compromised for brevity.

8.3.1 Expression of Need for Market Events Information by External Users

Table 8.1 shows a summary of the descriptive statistics of 176 rating responses from clients sampled among individuals who have requested for land information from the PVLMD of the LC.

Table 8.1: External users rating on market event component of land information

Subcomponent of market event information rated:	Mean	Std. Dev.	Std. Error	Median	Mode	r _{WG}	p < .01
Type of property available	4.4705	0.6750	0.0587	5	5	0.77	0.15
Type of interest in property	4.4611	0.7585	0.0567	5	5	0.71	
Value of lands/properties	4.2874	0.8650	0.0669	4	5	0.63	
Size of land or property	4.2874	0.7769	0.0601	4	4	0.70	
Property rate	4.3933	0.9258	0.0716	4	4	0.57	
Utility services available	4.2575	0.7988	0.0618	4	4	0.68	

Table 8.1 shows responses of clients labelled as external users for purposes of differentiating them from staff of the LC who also use the information. From the table, the mean values are consistently fairly close to the median values for all rated subcomponents. The modes also tend to coincide with the median. The small standard deviation relative to the mean in all ratings suggests that data points are quite close to the mean. The standard errors associated with all the means ratings are also relatively close to zero and this also suggests that there is little variability between the sample mean and population mean and, therefore, the sample chosen is likely to be an accurate reflection of the population (Miller, 1984; Field, 2009; Manu, 2013). It worthy to hint that small values for both standard deviation and standard errors reported in Table 8.1 appear to run through all the observations made in succeeding tables and analyses. Hence, unless other contrary observation is specifically mentioned, it is implies the sample chosen is likely to be an accurate reflection of the population of respondents.

Also, Table 8.1 reveals two categories of rating responses namely “strongly agree” and ‘agree” responses. First, the median rating score of 5 for information on type of landed property available in UREMs (with std. dev. = 0.6750, mean = 4.4705, mode = 5) and information on type of interest in property (with std. dev. = 0.7585, mean = 4.4611, mode = 5) represents a consensus among respondents that they “strongly agree” these sub-components of market information are the most required for decision making and effective participation in UREMs. The median value of 4 for ratings on information on the other constituents of market information in Table 8.1 represents consensus among respondents that they “agree” these sub-components of market information are required.

In order for all median ratings to be interpreted with confidence, r_{WG} values for all sub-components rated under both categories exceed 0.34 at $p < 0.01$. This is evidence of

significant agreement among the respondents that market information is an essential component of land information required in UREMs. However, two out of the six components are outstanding with strong agreement among respondents. These are:

- a) information on landed property available; and
- b) type of interest existing in landed property available.

These outcomes are noted for subsequent analysis and discussions (see Section 8.12).

8.3.2 Expression of Need for Market Events Information by Internal Users

Table 8.2 presents a summary of the descriptive statistics of responses of 74 rating responses from a sample of information users identified as staff of the LC and, therefore, labelled as internal users. Like Table 8.1, Table 8.2 also reveals two categories of rating responses. First, the median rating score of 5 for information on type of landed property available in UREMs (with std. dev. = 0.6235, mean = 4.4595, mode = 5) represents a consensus among respondents that they “strongly agree” that this sub-component of market information is the most required in UREMs.

Table 8.2: Results of ratings on market event information by internal users

Subcomponent of market event information rated:	Mean	Std. Dev.	Std. Error	Median	Mode	r _{WG}	p <.01
Type of property available	4.4595	0.6235	0.0725	5	5	0.81	0.23
Type of interest in property	4.3378	0.6470	0.0752	4	4	0.79	
Value of lands/properties	4.3243	0.6434	0.0748	4	4	0.79	
Size of land or property	4.2838	0.6928	0.0805	4	4	0.76	
Property rate	3.9595	0.8670	0.1008	4	4	0.62	
Utility services available	4.1892	0.8708	0.1012	4	4	0.62	

Second, the median value of 4 for ratings on information on type of interest in property, value of landed properties, size of land or property, property rate, and availability of social amenities represents consensus among respondents that they “agree” that these

sub-components are required in UREMs. In Table 8.2, the r_{WG} values for all six rated sub-components exceed 0.23 at $p < 0.01$. This is evidence of significant agreement among the respondents that market information is an essential component of land information required in UREMs with information on type of landed property available strongly rated.

8.3.3 Expression of Need for Market Information by Intermediary Users

Intermediary users under consideration constitute 20 respondents identified as neither users of land information nor commissioned agents. Rather, they are individuals acting on behalf of a relative, friend or colleague. These respondents were sampled as they were in the process of acquiring land information from the LC. Unlike results analysed in Tables 8.1 and 8.2, there is only one category of observation that can be reported here. Table 8.3 shows that the median rating score for all items rated by the intermediary users is 4 and this represents a consensus among respondents that they “agree” that all sub-components of market information are required in UREMs.

Table 8.3: Results of ratings on market event information by intermediary users

Subcomponent of market event information rated:	Mean	Std. Dev.	Std. Error	Median	Mode	r_{WG}	$p < .01$.
Type of property available	4.1000	1.0208	0.2283	4	4	0.48	0.46
Type of interest in property	4.3000	0.7327	0.1638	4	4	0.73	
Value of lands/properties	3.9500	1.1459	0.2562	4	5	0.34	
Size of land or property	4.0500	0.7592	0.1698	4	4	0.71	
Property rate	3.6500	0.8127	0.1817	4	4	0.67	
Utility services available	4.1000	0.7182	0.1606	4	4	0.74	

In Table 8.3, the r_{WG} values for all the rated items, except that of information on values of landed properties, exceed 0.46 at $p < 0.01$. Thus, r_{WG} values that exceeded the 0.46 cut off point are evidence of significant agreement among intermediary users that these sub-components of market information are essentially required in UREMs. Indeed, it

could be that because intermediary users are likely not to show interest in acquiring landed property in the interim, values might seem not to be relevant now.

8.3.4 Expression of Need for Market Information by LIUs

Descriptive statistics in Table 8.4 provides a picture of 261 rating responses from all land information consumers sampled as respondents. This includes external users, internal users, and intermediary consumers or users of land information.

Table 8.4: Results of ratings on market event information by information users

Subcomponent of market event information rated:	Mean	Std. Dev.	Std. Error	Median	Mode	r _{WG}	p <.01
Type of property available	4.4406	0.6971	0.0431	5	5	0.76	0.12
Type of interest in property	4.4138	0.7267	0.0445	5	5	0.74	
Value of lands/properties	4.2720	0.8359	0.0517	4	4	0.65	
Size of land or property	4.2680	0.7525	0.0466	4	4	0.72	
Property rate	3.9195	0.9015	0.0558	4	4	0.59	
Utility services available	4.2561	0.8125	0.0503	4	4	0.67	

The mean values in Table 8.4 converge with the trend of mean rating values consistently being close to the median values. The median scores are supported by the modal scores as they coincide for all rated items. The small standard deviation relative to the mean in all ratings is an indication that data points are quite close to the mean, which also approximates to the median. The standard errors associated with all the mean ratings are also relatively close to zero and this suggests that there is little variability between the sample mean and population mean. This gives an indication that the sample is likely to be an accurate reflection of the population of existing and potential land information users in UREMs.

Following the above, ratings by all 267 respondents also yield two categories of responses. These are ‘strongly agree’ and ‘agree’. Consistent with earlier results and approach to reporting, the ‘‘strongly agree’’ outcomes are on the following:

- a) information on type of landed property available in UREMs; and
- b) type of interest in landed property available.

The result represents a consensus among all 261 raters that they “strongly agree” that these sub-components of market information are required for use in UREMs. Second, the median value of 4 for ratings on information on type of interest in property, value of landed properties, size of landed property, property rate, availability of social amenities, represents consensus among respondents that they “agree” that these sub-components of market information are required in UREMs.

The r_{WG} values for all the rated items under both categories exceed 0.12 at $p < 0.01$. This is evidence of significant agreement among the 261 respondents that market information is an essential component of land information in UREMs with information on type of landed property available and type of interest in landed property strongly rated. In conclusion, results from the analyses emphasise that information for access to UREMs in terms of who has what for sale and on what conditions in terms of what interest is available in relation to whether leasehold, assignment or letting conditions are crucial for a responsive LIS. For policy implications, see discussions in Section 8.12.

8.4 INFORMATION ON LAND TENURE

Land tenure information considered in the research has five components. These include information on:

- (i) whether land available is a stool or family land;
- (ii) proprietary interest;
- (iii) principal witnesses to a valid grant of rights by a customary land owner;
- (iv) litigation status of land; and
- (v) government interest.

Results of responses from each of the three categories of respondents namely external, internal and intermediary users as well as together as combined users are presented with focus on ratings of strong agreement among respondents.

8.4.1 Expression of Need for Land Tenure Information by External Users

Table 8.5 shows descriptive statistics of ratings by 167 external land information users in relation to information on land tenure required for decision making and effective participation in UREMs.

Table 8.5: Results of ratings on market event information by external users

Sub-component of land tenure information rated:	Mean	Std. Dev.	Std. Error	Med.	Mode	r _{WG}	p <.01
Stool or family land	4.0898	0.9238	0.0715	4	4	0.57	0.15
Proprietary owner	4.6287	0.6446	0.0499	5	5	0.79	
Principal witnesses	4.5269	0.6569	0.0508	5	5	0.78	
Litigation status of land	4.3808	0.7390	0.0572	5	5	0.73	
Government interest	4.3892	0.8562	0.0663	5	5	0.63	

The mean rating scores in Table 8.5 appear fairly close to the median whilst the mode and median are equal throughout.

Two categories of rating responses are discernible from Table 8.5. These are responses of median score of 5 for “strongly agree” and median score of 4 for “agree”. Taking the relevant standard deviations, mean, and mode also into account, there is a consensus among respondents that they “strongly agree” the following subcomponents of land tenure information are essentially required for use in UREMs. These are information on:

- (i) proprietary owner;
- (ii) principal witnesses to a grant;
- (iii) litigation status on landed property; and
- (iv) government interest in a property.

In terms of information on whether land being offered in the market is a stool or family land, there is consensus among respondents that they “agree” this information subset is required in UREMs. Altogether, there is statistical significance for all items rated since the r_{WG} values for all items rated under both categories exceed 0.15 at $p < 0.01$. Hence, there is evidence of significant agreement among respondents that land tenure information is an essential component of information required in UREMs with information on proprietary owner, principal witnesses to a grant, litigation status, and government interest strongly required. These are noted for further analysis under Section 8.12.

8.4.2 Expression of Need for Land Tenure Information by Internal Users

Considering the importance of the median, mean, and mode, and the implications of small standard deviation and standard error values as discussed earlier, Table 8.6 shows rating responses of 74 internal consumers of land information.

Table 8.6: Results of ratings on land tenure information by internal users

Subcomponent of land tenure information rated:	Mean	Std. Dev.	Std. Error	Median	Mode	r_{WG}	p <.01
Stool or family land	3.7027	1.1193	0.1301	4	4	0.37	0.23
Proprietary owner	4.6216	0.6127	0.0712	5	5	0.81	
Principal witnesses	4.3378	0.8322	0.0967	4	5	0.65	
Litigation status of land	4.3649	0.8692	0.1010	5	5	0.62	
Government interest	4.4054	0.7007	0.0815	4.5	5	0.75	

With median rating scores of 5 and 4.5, which is approximately 5, Table 8.6 shows that internal users ‘strongly agree’ that three subsets of information on land tenure are required for transactions in UREMs. These are information on:

- (i) proprietary ownership;
- (ii) litigation status; and
- (iii) government interest in property.

Concerning information on stool or family land and principal witnesses to a grant, Table 8.6 shows that internal users “agree” these subsets of land tenure information are required in land information. The r_{WG} values for all items rated under both categories exceed 0.23 at $p < 0.01$. Hence, there is evidence of significant agreement among internal users that land tenure information is an essential component of standard information required in UREMs. However, there is a stronger preference for information on proprietary owner, principal witnesses to a grant, litigation status, and government interest. Comparing internal users’ preferences to external users’ preferences show that both categories of land information users have “strongly agree” consensus among them that information on the following are required:

- (a) proprietary owner;
- (b) litigation status; and
- (c) government interest.

8.4.3 Expression of Need for Land Tenure Information by Potential Users

Compared to external and internal land information consumers, potential consumers expressed stronger preferences that information on proprietary owner and litigation status are required for use in UREMs. Table 8.7 shows the statistic descriptive details.

Table 8.7: Results of ratings on land tenure information by potential users

Subset of land tenure information rated:	Mean	Std. Dev.	Std. Error	Median	Mode	r_{WG}	$p < .01$
Stool or family land	4.1300	0.5871	0.1313	4	4	0.83	0.46
Proprietary owner	4.5000	0.5130	0.1148	4.5	4	0.87	
Principal witnesses	4.4500	0.5104	0.1141	4	4	0.87	
Litigation status of land	4.5500	0.6863	0.1535	5	5	0.76	
Government interest	4.2500	0.7164	0.1601	4	4	0.74	

Regarding the information on stool or family lands, principal witnesses and government interest in land, intermediary users “agree” that these subsets of land tenure information are required for use in UREMs. All median ratings can be interpreted with confidence because r_{WG} values for all rated items in Table 8.7 exceed 0.46 at $p < 0.01$. This is evidence of significant agreement among raters that land tenure information is an essential component of land information required in UREMs with information on proprietary owner and litigation status having “strongly agree” rating.

8.4.4 Expression of Need for Land Tenure Information by LIUs

Aggregating subjective rating responses of all 261 respondents, Table 8.8 depicts that mean values generally appear to be closer to the median values and the mode whereas the median and the mode are equal throughout. Evidence of small standard deviations and errors are also shown with the necessary effects implied.

Table 8.8: Results of ratings on land tenure information by LIUs

Subset of land tenure information rated:	Mean	Std. Dev.	Std. Error	Median	Mode	r_{WG}	$p < .01$
Stool or family land	3.9847	0.9765	0.0604	4	4	0.52	0.12
Proprietary owner	4.6169	0.6254	0.0381	5	5	0.80	
Principal witnesses	4.4674	0.7043	0.0436	5	5	0.75	
Litigation status of land	4.5172	0.7775	0.0482	5	5	0.70	
Government interest	4.3831	0.8031	0.0497	5	5	0.68	

The preceding results show that there is consensus that external, internal, and potential information users “agree” that information on whether a parcel of land is stool or family land, is required in UREMs. LIUs rating response in Table 8.8 confirms this consensus of agreement. Beyond this, the results also clearly suggests that there is consensus among the 261 respondents that they “strongly agree” the following subcomponents of land tenure information are required for use in UREMs. These include information on:

- (i) proprietary owner;
- (ii) principal witnesses to land grants;
- (iii) litigation status of landed property; and
- (iv) government interest in landed property.

The median ratings on the results can be interpreted with confidence because the r_{WG} values for all rated items under both “strongly agree” and “agree” exceed 0.12 at $p < 0.01$.

8.5 INFORMATION ON LAND USE

Land use information in the research covers four main areas. These are information on:

- (i) classification of area where landed property is located;
- (ii) uses and restrictions on landed property;
- (iii) building standards and permissible heights within a location; and
- (iv) building and development permits on developed properties.

Unlike two categories of outcomes observed under market events, and land tenure sub-components of land information, rating responses observed under land use component show one category of outcome throughout all items rated and across all the three categories of respondents (see Appendices 5A, 5B and 5C). There is one category of outcome because the sub-groups of respondents namely external, internal and intermediary land information users “agree” that land use information is required for transactions in UREMs.

For each of the three sub-groups of respondents, Appendices 5A, 5B and 5C respectively show median rating scores of 4 for all rated sub-components of land use information. Also, the r_{WG} values for all ratings by each sub-group exceed 0.15 at $p < 0.01$ for external users, 0.23 at $p < 0.01$ for internal users and 0.46 at $p < 0.01$ for potential users. Thus, the rating responses from external, internal and intermediary land

information show consensus in agreement that land use information is required for transactions in UREMs. Succeeding section presents the outcome of LIUs responses.

8.5.1 Expression of Need for Land Use Information by LIUs

Like the results in Appendices 5A, 5B and 5C, the results in Table 8.9 also converge with ratings of the three sub-groups of respondents. First, the mean values are fairly closer to corresponding median values and the mode. Also, there are small standard deviations and standard errors relative to respective mean values.

Table 8.9: Results of ratings on land use information by LIUs

Subcomponent of land use information rated:	Mean	Std. Dev.	Std. Error	Median	Mode	r _{WG}	p < .01
Classification of location	4.2069	0.7201	0.0446	4	4	0.74	0.12
Uses and restrictions	4.3027	0.7155	0.0443	4	4	0.74	
Developments allowed	4.0536	0.9390	0.0581	4	5	0.56	
Existing building permits	4.2989	0.0481	0.7763	4	5	0.70	

Consistent with descriptive statistics for external, internal, and potential users (see Appendices 5A, 5B, 5C), Table 8.9 shows rating responses of all 261 respondents with median value of 4 throughout, which represents consensus among respondents that they “agree” that subcomponents of land use information is required for use in UREMs. The r_{WG} values for all rated subcomponent exceeded 0.12 at p < 0.01. This is evidence of significant agreement among LIUs that land use information is a component of information required in UREMs. The implication of this result is that land use information is required as a component of all-in-one land information for transactions in UREMs.

8.6 INFORMATION ON ENVIRONMENTAL QUALITIES OF LAND

Information on environmental qualities of landed property under investigation in the study focuses on four key areas as follow:

- (i) protected environmental sites;
- (ii) environmental history of landed property;
- (iii) age of property and defects; and
- (iv) area prone to natural disasters such earth tremors

Appendices 5D, 5E, and 5F depict outcome of rating responses by external, internal and intermediary information users respectively. Similar to observations made under Section 8.5, median score for rating responses by these three sub-groups of respondents is 4 for all sub-components of environmental qualities rated. The repeated median value of 4 for ratings on relevant environmental information indicated there is consensus among external, internal and intermediary users that they “agree” that sub-components of environmental information rated are required for use in UREMs.

Appendix 5G shows the results of responses from all 261 respondents. Also, reporting at the level of LIUs, the sample statistics reveal trends in closeness of the mean rating values to their corresponding medians. Consistent with observations under the sub-categories, standard deviations and standard errors relative to the means are small. Thus, median values of 4 for items rated indicates consensus among all users that they “agree” subcomponents of environmental information rated are required for decision making in UREMs. The r_{WG} values for all subcomponents rated exceed 0.12 at $p < 0.01$. This is evidence of significant agreement among respondents that can be interpreted with confidence that environmental information is required in UREMs.

8.7 INFORMATION ON PUBLIC AMENITIES

Public amenities information when in supply is likely to facilitate effective decision making, efficient participation and to bring information symmetry in UREMs as expressed by respondents. Hence, information on public amenities as the fifth sub-component of land information focuses on three key areas.

The key areas include:

- (i) type and condition of access roads;
- (ii) availability of public utilities; and
- (iii) land earmarked for public infrastructure development.

Information on public amenities being looked at relates to type and condition of access roads, availability of public utilities, and corridor of land reserved for existing or proposed roads, underground and overhead cables. These are considered across sub-groups of respondents. Following this, Table 8.10 provides the relevant details about results of rating responses of all three categories of information consumers. Apart from external users' median rating score of 5 for information on availability of utility of services as "strongly agree", all other items were rated by subgroups as "agree" with a median of 4.

The r_{WG} values for all items rated by external users exceed 0.15 at $p < 0.01$. The r_{WG} values for all items rated by internal users exceed 0.23 at $p < 0.01$. The r_{WG} values for all items rated by external users exceed 0.46 at $p < 0.01$. The r_{WG} values for all items rated by all users exceed 0.12 at $p < 0.01$. Each of these is evidence of significant agreement among respondents that can be interpreted with confidence that public amenities information is an essential component of land information required in UREMs.

Table 8.10: Sub-Group and All Users rating on public amenities information

Respondents	Subcomponent of public amenity information rated:	Mean	Std. Dev.	Std. Error	Median	Mode	r _{wG}	p <.01
External Users	Type and condition of access roads	4.2156	0.8149	0.0631	4	4	0.67	0.15
	Availability of public utilities	4.4371	0.6262	0.0485	5	5	0.80	
	Land earmarked for infrastructure/services	4.2754	0.8041	0.0622	4	5	0.68	
Internal Users	Type and condition of access roads	4.1757	0.7283	0.0847	4	4	0.73	0.23
	Availability of public utilities	4.2703	0.7080	0.0823	4	4	0.75	
	Land earmarked for infrastructure/services	4.0811	0.9617	0.1118	4	4	0.54	
Intermediary Users	Type and condition of access roads	3.9500	0.6863	0.1535	4	4	0.76	0.46
	Availability of public utilities	4.300	0.4702	0.1051	4	4	0.89	
	Land earmarked for infrastructure/services	4.1500	0.4894	0.1094	4	4	0.88	
All Users	Type and condition of access roads	4.1839	0.7824	0.0484	4	4	0.69	0.12
	Availability of public utilities	4.3793	0.6429	0.0398	4	4	0.79	
	Land earmarked for infrastructure/services	4.2107	0.8353	0.0517	4	4	0.62	

8.8 DEMEND FOR ALL-IN-ONE LAND INFORMATION

Having considered five subsets of land information separately in the preceding sections, the study probes further into the extent real estate market dealers might express the need for all-in-one land information as standard information required to reduce the incidence of information symmetry in UREMs. Table 8.11 presents the results of the investigation.

Table 8.11: Expression of need for all-in-one land information by LIUs

Demand for all-in-one land information	Mean	Std. Dev.	Std. Error	Median	Mode	r_{WG}	$p < .01$
External Users	4.5210	0.6752	0.0522	5	5	0.71	0.15
Internal Users	4.2297	0.7860	0.0914	4	4	0.69	0.23
Intermediary Users	4.400	0.5026	0.1124	4	4	0.87	0.46
LIUs	4.4291	0.7069	0.0438	5	5	0.75	0.12

The median rating score of 5 by external users represents a consensus that respondents “strongly agree” that all-in-one land information as standard land information is an essential requirement in UREMs. The median rating score of 4 by internal users and intermediary users both represent consensus that these categories of users “agree” that, all-in-one land information is an essential requirement in UREMs. The r_{WG} value for 167 external users exceeds 0.15 at $p < 0.01$ and for 74 internal users it exceeds 0.23 at $p < 0.01$ as well as for 20 intermediary users, which exceeds 0.46 at $p < 0.01$. All three results provide evidence of significant agreement among external, internal and potential users that all-in-one land information is required in UREMs.

The overall median rating score of 5 for LIUs indicates consensus that respondents generally “strongly agree” that all-in-one as standard land information is an essential information required in UREMs. The r_{WG} value for 261 respondents exceeds 0.12 at $p < 0.01$. This is evidence of significant agreement among existing and potential land

information users that all-in-one standard land information is required in UREMs. The willingness of LIUs to pay for this information under competition for supply of land information is considered in Section 8.11.

8.9 LIUs PERCEPTION ABOUT PSLISs' SUPPLY OF INFORMATION

Section 8.8 has established that all-in-one land information is likely to be the relevant land information required in UREMs to close the information gaps that contribute to the prevalence of information asymmetry. Building on this outcome, the present section reports on LIUs perceptions about whether the PSLISs are capable of performing better than PSLAAs in harnessing of all-in-one land information. There are six key areas over which the results are presented. These are:

- (i) compilation of landed property data;
- (ii) processing and keeping of land records;
- (iii) innovation in service delivery;
- (iv) awareness creation about information services;
- (v) reduction in cost of accessing information; and
- (vi) prompt response to information consumers' needs.

Rating results on the above by external, internal and intermediary users as well as LIUs are presented as follows.

Table 8.12 shows the results from external users. The results show that external land information users rate the above areas of land information management with a median score of 4 for all except for median rating of 3 for processing of data and keeping reliable land data.

Table 8.12: External users rating on capability of private land information suppliers

Users perception about private sector capability to:	Mean	Std. Dev.	Std. Error	Med	Mode	r _{WG}	p < .01
Compile land/ property data.	3.4191	1.1839	0.0522	4	4	0.23	0.15
Process and keep land data	3.2874	1.2423	0.0916	3	2	0.23	
Be innovative in supply	3.5449	1.0960	0.0961	4	4	0.40	
Create awareness for supply	3.6886	1.0805	0.0848	4	4	0.42	
Reduce cost of information	3.5689	1.1326	0.0836	4	4	0.36	
Provide timely information	3.8563	0.9896	0.0876	4	4	0.51	
Respond promptly to needs	3.8503	1.0098	0.0766	4	4	0.49	

From Table 8.12, the median rating scores of 4 and 3 respectively imply that external users “agree” that PSLISs are likely to do better than PSLAAs but “neither agree nor disagree” that PSLISs can process and keep reliable land data than PLSAAs. Both results are statistically significant because the r_{WG} values exceed 0.23 at $p < .01$.

Regarding internal users, Table 8.13 displays results similar to the one obtained above.

Table 8.13 Internal users rating on private sector land information suppliers

Users perception about private sector capability to:	Mean	Std. Dev.	Std. Error	Med.	Mode	r _{WG}	p < .01
Compile land/ property data	3.2703	1.1622	0.1351	4	4	0.32	0.23
Process and keep land data	3.1351	1.2532	0.1457	3	2	0.21	
Be innovative in supply	3.3784	1.0689	0.1243	4	4	0.43	
Create awareness for supply	3.4865	1.0885	0.1265	4	4	0.41	
Reduce cost of information	3.2162	1.2194	0.1417	3.5	4	0.26	
Provide timely information	3.5270	1.0882	0.1265	4	4	0.41	
Respond promptly to needs	3.4324	1.0609	0.1233	4	4	0.44	

From Table 8.13, internal users also recorded a median score of 4 for all performance areas rated but recorded a median score of 3 for PSLIS capability to process and keep land information. The results imply that internal users “agree” that PSLISs are likely to

do better than PSLAAs but “neither agree nor disagree” that PSLISs can process and keep reliable land data than PLSAAs. The first result, which is “agree”, is statistically significant because the r_{WG} values exceed 0.23 at $p < .01$. However, the second result, which is “neither agree nor disagree” is not statistically significant. This is because the r_{WG} value of 0.21 does not exceed 0.23 at $p < .01$. This implies that there is no consensus among internal users on PSLIS capability to process and keep land information.

Table 8.14 shows results of intermediary users. With median rating scores of 4, the results suggest that intermediary users “agree” that PSLISs can compile landed property data, create awareness, reduce cost of information, deliver timely information service and respond promptly to market needs better than PSLAAs. The results are significant except that of compiling landed property because the r_{WG} value of 0.29 does not exceed 0.46 at $p < .01$

Table 8.14: Intermediary users rating on private sector land information suppliers

Users perception about private sector capability to:	Mean	Std. Dev.	Std. Error	Med.	Mode	r_{WG}	$p < .01$
Compile landed property data	3.0500	1.1910	0.2663	3.5	4	0.29	0.46
Process and keep land data	2.6000	1.0954	0.2449	2	2	0.40	
Be innovative in supply	3.1500	1.2680	0.2835	3	4	0.20	
Create awareness for supply	3.3500	0.9881	0.2209	4	4	0.51	
Reduce cost of information	3.2000	0.9515	0.2128	4	4	0.55	
Provide timely information	3.2000	1.1517	0.2575	4	4	0.34	
Respond promptly to needs	3.2000	1.0052	0.2248	4	4	0.49	

Table 8.14 also shows that with median rating score of 2, intermediary users “disagree” that PSLISs can better process and keep land data than PSLAAs. In addition, the median score of 3 suggests that intermediary users “neither agree nor disagree” that PSLISs can be innovative in supply of land information than PSLAAs.

Both results are, however, not significant because the r_{WG} values of 0.40 and 0.20 for the median rating scores of 2 and 3 respectively not exceed 0.46 at $p < .01$. Hence, there is no consensus among intermediary raters over these rated areas.

In any case, analysis of combined responses from LIUs gives the land information market view of the subject matter of rating. Consistent with various group ratings, Table 8.15 provides a snapshot of two categories of ratings by 261 respondents.

Table 8.15: Results of responses on PSLIS by LIUs

Users perception about PSLIS capability to:	Mean	Std. Dev.	Std. Error	Med	Mode	r_{WG}	$p < .01$
Compile landed property data	3.3487	1.1788	0.0730	4	4	0.31	0.12
Process and keep land data	3.1916	1.2441	0.0770	3	2	0.23	
Be innovative in supply	3.4674	1.1041	0.0683	4	4	0.39	
Create awareness for supply	3.6053	1.0784	0.0668	4	4	0.42	
Reduce cost of information	3.4406	1.1541	0.0714	4	4	0.33	
Provide timely information	3.7126	1.0478	0.0649	4	4	0.45	
Respond promptly to needs	3.6628	1.0462	0.0648	4	4	0.45	

First, land information users “neither agree nor disagree” that PSLISs are capable of processing land data and keeping reliable land information than PSLAAs. This consensus in rating can be interpreted with confidence as the r_{WG} value of 0.23 exceeds p value of 0.12 at 0.01 confidence intervals (with mean = 3.1916, median = 3, mode = 2). Second, all land information users “agree” that PSLISs can perform better than PSLAAs in the other rated sub-items as r_{WG} values all exceed p values of 0.12 at 0.01 confidence with all medians equal to modes. The result obtained from LIUs is relevant to the development of a framework for land information management (see Chapter 10 Section 10.2).

8.10 LIUs' PERCEPTION ABOUT COMPETITION

Competition as espoused in ETK impliedly suggests that it is a better approach for land information harnessing than monopoly because it can enable efficient land information service delivery and also, enable information users or consumers to know who will serve them better (see Section 4.7 and 4.9). Verifying this in UREM setting, Table 8.16 depicts convergence in responses by the three categories of information users on whether competition will enable efficient supply of information and will enable the public know who the best service provider may be. Table 8.16 shows that there is consistency in the subjective ratings with median values of 4, which implies that external, internal, and intermediary users “agree” that first, competition is likely to enable efficient supply of land information. Secondly, competition can enable the public to know which supplier is likely to deliver best services. All the responses are significant as the respective r_{WG} values exceed the $p < 0.01$ values except for potential users where the response is not significant at $p < 0.01$ and $p < 0.05$.

The responses show that land information users in UREMs hold the view that competition among PSLISs is likely to ensure efficient supply of land information and in addition, likely to enable the public to know which information supplier is delivering best quality service. Thus, overall respondents' ratings confirm ETK's propositions on competition. However, as to whether land information users are willing to pay for improved land information service delivery, succeeding discussions after Table 8.13 provides an indication of the nature of potential demand for the information with respect to willingness to pay under competition. Drawing insights from Section 8.9, the competition as envisaged for information harnessing relates more to dissemination of the land information.

Table 8.16: Results on LIUs' perception about deregulation for competition in land information supply

Users	Respondents perception that competition will enable:	Mean	Std. Dev.	Std. Error	Median	Mode	r _{WG}	p <.05	p <.01
External Users	Efficient supply of information	3.8563	1.1209	0.0781	4	4	0.37	0.10	0.15
	Public know best service provider	3.8383	1.1211	0.0867	4	4	0.37		
Internal Users	Efficient supply of information	3.3378	1.1381	0.1323	4	4	0.35	0.16	0.23
	Public know best service provider	3.3919	1.2104	0.1302	4	4	0.37		
Potential Users	Efficient supply of information	3.2500	1.3717	0.3067	4	4	0.59	0.34	0.46
	Public know best service provider	3.2500	1.2513	0.2798	4	4	0.22		
All Users	Efficient supply of information	3.6628	1.1701	0.0725	4	4	0.31	0.08	0.12
	Public know best service provider	3.6667	1.1503	0.0712	4	4	0.34		

8.11 LIUs WILLINGNESS TO PAY FOR LAND INFORMATION

Land information users have expressed the need for all-in-one land information as the information is likely to bring information symmetry among market participants in UREMs (Section 8.8). Based on this, LIUs expressed willingness to pay (WTP) and this result has yielded an empirical demand curve for land information. Impliedly, this follows the assertion in ETK that competition is likely to enable supply of land information at a reduced cost. Table 8.17 shows the summary of the amount that respondents are willing to pay for the kind of information required to bring about information symmetry in UREMs. For purposes of triangulation, the data is presented under sub-sample of respondents.

Table 8.17: Demand schedule for all-in-land information in UREMs

No.	Maximum Amount WTP in GH¢	Intermediary Users	Internal Users	External Users	All Users	Percentage of LIUs WTP
1	18.00	4	10	27	41	100.0
2	36.00	3	13	26	42	83.4
3	54.00	1	13	28	42	66.4
4	72.00	-	2	4	6	49.3
5	90.00	-	12	15	27	47.0
6	108.00	3	5	25	33	36.0
7	126.00	1	1	4	6	22.7
8	144.00	1	-	9	10	20.2
9	162.00	-	2	2	4	16.2
10	180.00	-	6	8	14	14.6
11	198.00	-	1	3	4	8.9
12	216.00	1	8	9	18	7.3
TOTAL		14	73	160	247	

TOTAL RESPONDENTS (SAMPLE SIZE) FOR EACH CATEGORY OF USERS

INTERMEDIARY USERS	= 20	NON- RESPONSE	= 6
INTERNAL USERS	= 74	NON- RESPONSE	= 1
EXTERNAL USERS	= 167	NON-RESPONSE	= 7
TOTAL	= 261		=14

8.11.1 Relationship between Willingness to Pay and Quantity Demanded

Scatter plot diagrams of the data in Table 8.17 produced downward sloping demand curves for land information. In economics, such a downward sloping demand curve implies an inverse relationship between price and quantity demanded. Thus, more land information is likely to be demanded, all things being equal, if price falls and the quality of access to land information and quality of information improve. However, in order to demonstrate the reliability of the willingness to pay, the analysis is taken a step further in order to establish the statistical significance of the relationship.

A bivariate correlation (with Pearson product-moment correlation coefficient) was conducted to determine the relationship between quantity demanded and the amount clients are willing to pay, which is price of information. Variable scores distribution were normally distributed from the histogram scores (see Appendix 5H). Linearity and homoscedasticity were established from inspecting the scatter plots of scores. These three assumptions from the preliminary analysis were performed to determine the appropriate choice of statistical model for the test. Using the data in Table 8.17 above, the result of the analysis as shown in Table 8.18, indicates a strong, negative and statistically significant relationship between price and quantity demanded ($r = -.709$, $N = 247$, $p < 0.05$). The inverse relationship mathematically implies that as quantity demanded increases, the amount clients are willing to pay decreases. In economics, this implies that as price of information falls, the quantity demanded increases.

The result suggests that a method that reduces the cost of accessing land information is likely to promote wide access and use of land information. This finding supports ETK and also, consistent with the approach that can be used for analysing an intervention with downward sloping demand curve as explained using Figure 4.3 in Chapter (Poe *et al.*, 1992; Zerbe and Dively, 1994). Thus, a market demand schedule sloping downward

implies that an information supplier is likely to sell additional unit of output by reducing price on every unit sold over a period of time.

The sub-sample groups scatter plots diagrams (see Appendices 5I, 5J, and 5K) show a general trend in the data, which with the help of a regression line fitted into the plotted data summarises the relationship between WTP and quantity of land information likely to be demanded by information users (Miller, 1984; Field, 2009). The linear trend defined by the regression line conforms to the standard pattern of equation of a straight line as $Y = bX + a$ where a and b are constants and correspondingly represent the intercept on the y-axis (WTP axis) and gradient or slope of the graph respectively. The gradient in the scatter plots represent the number of units of Y by which the line rises or falls per unit increase in X.

The scatter plot diagrams in the above-mentioned appendices suggest the likely relationship between improved land information supply and quantity demanded at a reduced price. Tables and regression analyses that follow provide statistical backing to the relationships.

Table 8.18: Relationship between quantity demanded and price (willingness to pay)

Correlation		Price
Quantity	Pearson Correlation	-.709
	Sig. (2-tailed)	.005*
	N	247

*. Correlation is significant at the 0.05 level (2-tailed)

Table 8.19: Linear regression results

Model Summary ^b									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.709 ^a	.503	.453	47.999	.503	10.111	1	10	.010

a. Predictors: (Constant), Quantity demanded

b. Dependent Variable: Price willing to pay

Table 8.20: Coefficient of results

Coefficients ^a						
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	
	B	Std. Error	Beta			
1	(Constant)	177.921	23.645		7.525	.000
	Quantity demanded	-2.948	.927	-.709	-3.180	.010

a. Dependent Variable: Price willing to pay

The model indicates a strong, negative and statistically significant relationship between the two variables.

Model Equation

Willingness to pay (**Price**) = 177.92 – 2.95(**Quantity demanded**) + 0.927(**error**). The equation confirms the result of the combined scatter plot equation line, which conforms to the standard pattern of equation of a straight line as $Y = bX + a$ where a and b are constants and correspondingly represent the intercept on the y-axis (WTP axis) and gradient or slope of the graph respectively. The gradient in the scatter plots represent the number of units of Y by which the line rises or falls per unit increase in X.

In all, Figure 8.1 shows the demand curve of results obtained by using data obtained from percentage cumulative change in willingness to demand all-in-one land information as price changes. The data is shown in the extreme right of Table 8.17. Based on the data starting from the bottom and upwards in Table 8.17 mentioned,

Figure 8.1 shows the inverse relationship between price of all-in-one land information and the percentage of LIUs likely to demand the information as the price falls from GH¢216.00 to GH¢18.00.

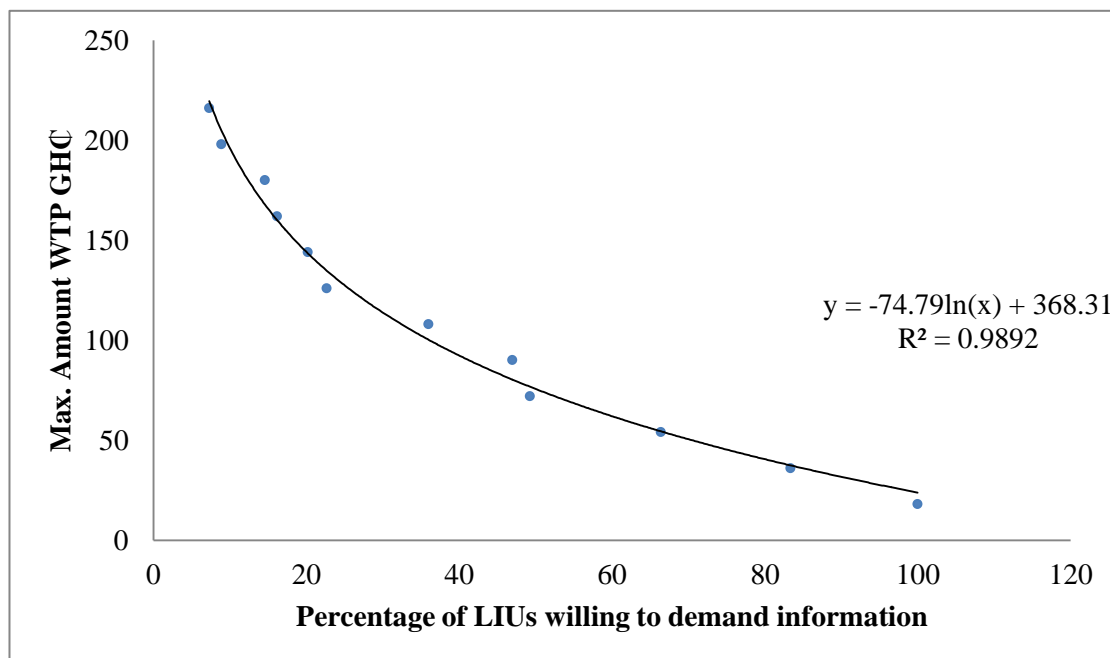


Figure 8. 1: Relationship between price and percentage of users of land information

The log linear curve above depicts that less than 10% of respondents are likely to demand all-in-one at a price of GH¢216.00. However, as price falls, the percentage of LIUs who are likely to demand the information increases. Logically, at the minimum price of GH¢18.00, all respondents (100%) who expressed maximum willingness to pay for all-in-one land information are likely to demand the information.

8.12 DISCUSSION OF FINDINGS

First of all, LIUs have identified market information about the type of landed property available in the market and the type of interest. These key findings may imply that land information users are concerned about access to the market in an efficient manner. This is because in the absence of readily available information to bring sellers and buyers together, it means that buyers may have to incur costs to search for the type of property they need. Impliedly, where the relevant information is scarce, there may be a

corresponding likelihood of high search cost being incurred. Thus, a land information management regime that does not ensure smooth flow of information about the type of landed properties available in the market is indeed an inefficient regime.

Similarly, information about the type of interest held in landed property is vital. It would appear from the result that these two sub-components of information have value of land, size of land, utility services and property rate imbedded in them. This might be a key reason why consistently these four sub-components were rated as “agree” (Sections 8.3.1 to Section 8.3.4). The finding is consistent with what pertains under efficient land information management regimes (Chapter 2).

With land tenure information, the findings is that land information users identified information about property owner, principal witness to the customary owner (that is, if it is a family land or tool land), litigation status and information about government interest. What this findings suggest is that land information users as market participants are concerned about certainty in land transactions. This is because without certainty, there is a probability of running into challenges of conflict and disputes over other purchasers of the same property. Hence, the information identified by LIUs as required converges with the challenges that this research has argued throughout, are symptoms of information asymmetry (Chapter Three). The findings also are convergent with discussions of secondary data under Sections 7.4.1 and 7.4.2, which relates to discussions of land related incidences at the CID Headquarters and the Specialized Land Court respectively.

Concerning, land use, environmental data, and public amenities, LIUs consistently rated this “agree”. This suggests that these sub-components of land information are likely to be considered in information about property available, since the property will have descriptive features. Thus, the findings points to two key information requirements,

which are information about access and providing certainty. In all, there is consensus that LIUs “strongly agree” that all-in-one land information is required in UREMs. Hence, the respondents have identified that for information symmetry to prevail, an all-encompassing information must be supplied.

Regarding who can better harness or manage all-in-one land information, LIUs responses suggest that PSLIS are likely to gather land data and disseminate information better than PSLAAs. Respondents were not sure whether PSLIS have the capability to process and store. Nevertheless, LIUs agree that PSLIS are likely to be more innovative, create better awareness, reduce land information access cost, provide timely information and respond promptly to their needs better than the bureaucrats. This finding is convergent with the ETK that competition is likely to enable product and service consumers know who will serve them better and that competition promote these benefits mentioned above. Thus, LIUs are of the opinion that competition is likely to bring efficient land information management and also best service delivery. This expression of opinion is consistent with what pertains in other parts of the world mentioned under Sections 2.2.2 and 2.2.3.

Finally, LIUs expressed the willingness to pay for an all-encompassing land information that is supplied under conditions mentioned in the immediate preceding discussions. This implies that, LIUs are value for money land information users. Hence, competitive pricing of information of land information is likely to induce more use of the information. This implies that land information users in the UREMs are indeed rational economic actors who are self-serving individuals who require relevant information in order to transact in UREMs.

The downward sloping demand curves have several implications for improved land information supply not in terms of the kind of information that is supplied but also how

it is supplied. One of such implications is likely to be consistent with the argument by Holstien (1996) and Antwi (2000) that creating competition is one of the methods that may be useful to reduce monopoly power and rent-seeking by public land administration officials. Also, the downward sloping demand curve does not only imply reduction in price, but it is likely to include transparency, access to information devoid of rent-seeking tendencies, undue delays and removal of bureaucracy. Furthermore, it may imply that if all-in-one land information can be supplied at lesser competitive prices, it is likely that many REM participants not utilizing the service presently may be attracted to demand the information.

8.13 SUMMARY OF CHAPTER

This chapter contributes significantly in determining the relevant information required to enable information symmetry prevail in UREMs in Ghana. The chapter addresses the fourth objective of the study which was not only to identify the relevant information required in UREMs but also, how it can be managed from a perspective of LIUs. LIUs have indicated that the PSLISs are likely to generate or gather land related data and disseminate it better than the PSLAAs. The analysis of the findings provides real estate market information sub-sets that can be considered as information indices. Regarding the processing of data and storage, LIUs are not sure whether PSLISs can do it better than PSLAAs. Hence, this suggests that the entire land information management regime cannot be subjected to competition until later time. The chapter, therefore, makes a significant contribution to the development of a land information management framework at the end of this research.

CHAPTER NINE

PRESENTATION AND ANALYSIS OF SUPPLIERS' DATA

9.0 INTRODUCTION

This chapter addresses the fourth research objective, which is to quantitatively assess the relationship between competition and knowledge. The Chapter considers the likelihood of practical knowledge possessed by prospective land information suppliers being used in competition to harness land information in UREMs following a policy of deregulation. The discussions mainly relates to verification of ETK propounded by Hayek (1945) with two key assertions. First, competition enables markets to supply relevant goods and services needed at market prices and second, supply of relevant goods and services occurs as a result of competition relying on the price system which is embedded in practical knowledge. Thus, the kind of knowledge discoverable is the subject of verification in UREMs.

9.1 POSSESSION OF MARKET KNOWLEDGE

In Chapter Five, market knowledge is contextualised as practical knowledge a potential land information supplier possesses about UREMs by virtue of personal experience, vicarious experience of others or by intuition. This relates to knowledge about standard land information required in the market on daily basis for use but cannot be easily found and used by individuals to make informed choices and decisions in UREMs. Hence, supply respondents' ratings on five main components of market knowledge are presented and analysed. In all, the r_{WG} = Single-item inter-rater agreement indices are based on a uniform null distribution and based on 10,000 simulations, r_{WG} values of 0.26 and 0.34 being the 95% and 99% confidence interval estimates respectively for group size of 102, and 5-point Likert scale response options. Impliedly, $r_{WG} > 0.34$ is

evidence of significant agreement at $p < 0.01$. The pattern of descriptive statistics, analysis and reporting of results is the same as done in Chapter Eight.

9.1.1 Rating Responses on Land Market Information Knowledge

Generally, Table 9.1 shows that median and mean values are within the range of agreement between the raters. The median value shows a strong agreement among raters that they possess knowledge that information about type of landed property available is a key component of market information, which market participants require as standard information in UREMs. The relatively small standard deviation in all the mean self-reported ratings gives an overall indication of little variability in the rating data. The standard errors associated with all the means ratings are also relatively close to zero and this appears to buttress the point that the sample chosen is likely to be an accurate reflection of the population (Field, 2009; Manu, 2012).

Table 9.1: PSLISs rating on knowledge of market information

Subcomponent of market event information rated:	Mean	Std. Dev.	Std. Error	Med.	Mode	r _{WG}	p < .01
Type of property available	4.3627	0.9097	0.0900	5	5	0.59	0.34
Type of interest in a property	4.3725	0.8074	0.0799	5	5	0.64	
Value of land/properties	4.3627	0.7550	0.0748	4.5	5	0.71	
Sizes of land/property	4.2549	0.8523	0.0844	4	5	0.64	
Property rates on property	4.5784	1.1030	0.1092	4	4	0.39	
Available social amenities	4.1176	0.9779	0.0968	4	4	0.52	

From Table 9.1, the median self-reported rating of 5 on the possession of market knowledge in relation to the following; type of property available for sale (with std. dev. = 0.9097, mean = 4.3627, mode = 5), type of interest in the property (with std. dev. = 0.8074, mean = 4.3725, mode = 5) and value of lands and properties (with std. dev. = 0.7550, mean = 4.3627, mode = 5) represents a consensus among raters that they “strongly agree” to possess knowledge that this market information is required as a

standard land information in UREMs. For land sizes, property rates and social amenities, the raters “agree.” In order for all median ratings to be interpreted with confidence, r_{WG} values for all the items rated exceed 0.34 at $p < 0.01$. This is evidence of significant agreement among the ratings that potential information supplies possess knowledge about market information as an essential requirement in UREMs.

9.1.2 Rating Responses on Land Tenure Information

The standard deviations in Table 9.2 indicate relatively small deviations compared to the mean, median, and modal ratings on all scale items. The median supported by the mode depicts a fairly good central tendency measure while the mean requires rounding up to be fairly close to the median. Thus, the median provides a good fit for the data

Table 9.2: PSLISs rating on knowledge of land tenure information

Subcomponent of land tenure information rated:	Mean	Std. Dev.	Std. Error	Med.	r_{WG}	Mode	$p < .01$
Stool or family land	3.9412	0.9100	0.0901	4	0.59	4	0.34
Proprietary owner	4.4510	0.7138	0.0784	5	0.69	5	
Principle witnesses to grants	4.1863	1.0121	0.1002	4	0.49	5	
Litigation status of land	4.3529	1.0210	0.1011	5	0.48	5	
Government interest in land	4.2549	1.0780	0.1067	5	0.42	5	

From Table 9.2, the median ratings of 5 for proprietary owner of property (with std. dev. = 0.7138, mean = 4.4510, mode = 5), litigation status of land (with std. dev. = 1.0210, mean = 4.3529, mode = 5) and government interest in land (with std. dev. = 1.0780, mean = 4.2549, mode = 5) is an indication of consensus among raters that they “strongly agree” to possess knowledge that the components of land tenure information are required in a standard land information in UREMs. First, regarding information on family/stool land and second, information on principal witnesses as signatories to transactions, the self-report rating results show that the respondents agree that they possess knowledge that such information is required in UREMS.

The relatively small standard error values close to zero and associated with the mean, median and mode suggests that the sample chosen gives an accurate reflection of the population. In order for all median ratings to be interpreted with confidence, r_{WG} values for all the 5-point Likert scale for each item rated exceed 0.34 at $p < 0.01$. This is evidence of significant agreement among the ratings that potential private sector information suppliers possess knowledge about land tenure components of market information required in UREMs.

9.1.3 Rating Responses on Land Use Information

Generally, the closeness of mean, median, and modal values in the self-report rating in Table 9.3 shows a fairly symmetrical rating scores. The median value of 4 throughout for each Likert scale item rated, is an indication of consensus among raters that they “agree” to possess knowledge that information on land use classification, permissible uses and prohibitions, height zoning, and development permits are sub-components of land use information required as standard information in UREMs.

Table 9.3: PSLISs self-report rating on knowledge of land use information

Subcomponent of land use information rated:	Mean	Std. Dev.	Std. Error	Med.	Mode	r_{WG}	$p < .01$
Classification of location	4.2157	0.8038	0.0760	4	4	0.68	0.34
Uses and restrictions	4.2353	0.7730	0.0765	4	4	0.70	
Developments allowed	4.0882	1.0157	0.1006	4	4	0.48	
Existing building permits	4.1275	1.0960	0.1085	4	5	0.40	

From Table 9.3, the rating results can be interpreted with confidence since r_{WG} value for each rated item exceeds 0.34 at $p < 0.01$. Hence, there is evidence of significant agreement among the ratings that potential private sector information suppliers possess knowledge about land use information components of market information required in UREMs.

9.1.4 Rating Responses on Environmental Information

Table 9.4 depicts two categories of rating responses from PSLISs concerning environmental information. The median values of 4.5 and 5 show that for information on potential environmental threat and area prone to earth tremors respectively, there is a consensus that potential land information suppliers “strongly agree” that they possess knowledge that this is required as component of standard information in UREMs. The median rating values of 4 protected environmental sites, history of property, and age and defects show that an potential land information suppliers “agree” that they possess knowledge that such information is required in UREMs.

Table 9.4: PSLISs self-report rating on knowledge of environmental information

Sub-set of environmental information rated:	Mean	Std. Dev.	Std. Error	Med.	Mode	r_{WG}	$p < .01$
Protected environmental sites	4.1471	1.0379	0.1028	4	5	0.46	0.34
Environmental history of land	4.1667	1.6667	0.1006	4	5	0.48	
Potential environmental threat	4.2255	0.9941	0.0984	4.5	5	0.51	
Age of property/defects	3.7843	1.0866	0.1076	4	5	0.41	
Area prone to earth tremors	4.1764	1.1206	0.1110	5	4	0.37	

The median rating score in Table 9.4 can be interpreted with confidence because the r_{WG} values for all the scale items rated exceed 0.34 at $p < 0.01$. Thus, this is evidence of significant agreement that potential private sector information suppliers possess knowledge about sub-components of environmental information required in UREMs. The section that follows considers the fifth sub-component of land information under investigation.

9.1.5 Rating Responses on Public Amenities Information

Unlike the median rating scores in Table 9.4, Table 9.5 shows one category of median rating score. The median score for each of the three Likert scale items rated is 4. This represents a consensus in rating that PSLISs “agree” that they possess knowledge that

public utility availability information is required as a standard land information in UREMs.

Table 9.5: PSLISs self-report rating on knowledge of public amenities information

Sub-component of public amenities information rated:	Mean	Std. Dev.	Std. Error	Median	Mode	r _{WG}	p < .01
Type/condition of access roads	4.2255	0.7162	0.0709	4	4	0.74	0.34
Availability of public utilities	4.3529	0.6986	0.0692	4	5	0.76	
Reservations for future amenities	4.1961	0.6036	0.0882	4	5	0.60	

The median rating scores in Table 9.5 can be interpreted with confidence because the r_{WG} values for all the scale items rated exceed 0.34 at p < 0.01. This implies there is evidence of significant agreement among the ratings that potential information supplies possess knowledge about public utility information as an essential requirement in UREMs.

9.2 POSSESSION OF ADAPTIVE KNOWLEDGE

Table 9.6 shows the descriptive statistic of results of self-reporting rating scores on adaptive or market response knowledge possessed by private sector individuals sampled as discussed in Chapter Six. Consistent with earlier analysis, the relatively small standard deviation in all the items rated gives an impression of little variability in the rating data. Similarly, the standard errors associated with all the five single items rated are also relatively close to zero and appears to give an impression that the sample chosen is an accurate reflection of the population. Summary of the outcomes are shown in Table 9.6 and presented as follows.

Table 9.6: PSLISs rating on market response knowledge

Subcomponent of market response knowledge rated:	Mean	Std. Dev.	Std. Error	Median	Mode	r _{WG}	p <.01
Utilising market networks	3.9804	0.7832	0.0776	4	4	0.69	0.34
Relevant inputs	4.0980	0.7644	0.0757	4	4	0.71	
Capital required	3.9314	0.7347	0.0727	4	4	0.73	
Labour required	3.9608	0.736	0.0736	4	4	0.72	
Technical know how	4.1078	0.8194	0.0811	4	4	0.66	

The median, mean and mode in this case appear to be almost symmetrical for self-report rating of 4 for all the five rated items. These are knowledge about using networks to help supply standard land information (with std. dev. = 0.7832, mean = 3.9804, mode = 4), knowledge of relevant inputs required to supply standard information (with std. dev. = 0.7644, mean = 4.0980, mode = 4), knowledge of capital required (with std. dev. = 0.7347, mean = 3.9314, mode = 4), The rest are knowledge of labour required (with std. dev. = 0.736, mean = 3.9608, mode = 4) and knowledge of technical know-how (with std. dev. = 0.8194, mean = 4.1078, mode 4).

Hence the median score of 4 represents a consensus among raters that they “agree” to possess knowledge on each of the single items rated. For all median ratings to be interpreted with confidence, r_{WG} values for all the 5-point Likert scale for each self-report item rated (0.69, 0.71, 0.73, 0.72, and 0.66) exceed 0.34 at p < 0.01. This is evidence of significant agreement among the ratings that potential private sector information suppliers possess knowledge adaptive knowledge required in competition for harnessing of land information.

9.3 POSSESSION OF EFFECTIVENESS KNOWLEDGE

The descriptive statistics of results in Table 9.7 below show self-reporting rating scores on effectiveness knowledge raters indicated they possessed that may be relied on for reliable land information supply. The standard deviation in the table compared to preceding analysis, remains relatively small in all the items rated and these give an impression of little variability in the rating data. The standard errors associated with the rated single items are also relatively close to zero and this suggests that sample of respondents chosen is an accurate reflection of the population.

Table 9.7: PSLISs self-report rating on market response knowledge

Subcomponent of effectiveness knowledge rated:	Mean	Std. Dev.	Std. Error	Med.	Mode	r _{WG}	p < .01
Providing reliable service	4.2843	0.8130	0.0805	4	5	0.67	0.34
Creating public awareness	4.1569	0.9413	0.0932	4	5	0.56	
Reducing cost of service	4.2451	0.9485	0.0939	5	5	0.55	
Supply customised product	4.0588	0.9526	0.0943	4	4	0.62	
Providing timely information	4.2157	0.9813	0.0972	4	5	0.52	

In terms of measures of central tendency, Table 9.7 shows that the median and mean scores appear to be closer whereas the modal score tend to be relatively high. Hence, the median is maintained as a measure of central tendency. The median score of 5 is associated with self-reporting rating score for knowledge of reducing cost in supply of standard land information (with std. dev. = 0.9485, mean = 4.2451, mode = 5). The score suggests that raters “strongly agree” that they possess effectiveness knowledge that may be utilised for to reduce cost of land information harnessing. The other repeated median score is 4 for each of the remaining rated item. These include knowledge of providing reliable information, knowledge of creating public awareness, knowledge of supplying tailored made information and finally knowledge of providing timely information.

The median score of 4 represents an overall agreement among raters that they possess knowledge on each of the single items rated. For a median ratings to be interpreted with confidence, r_{WG} values for each of the self-report item rated (0.67, 0.56, 0.55, 0.62, and 0.52) exceed 0.34 at $p < 0.01$. This is evidence of significant agreement among the ratings that potential private sector information suppliers possess adaptive knowledge required in competition for harnessing of land information. The implications of possession of adaptive knowledge and the other kinds of knowledge, which are yet to be considered, are discussed in Section 9 of the thesis.

9.4 POSSESSION OF EFFICIENCY KNOWLEDGE

Table 9. 8 depicts the descriptive statistics of self-reporting rating scores on efficiency knowledge raters indicated they possessed that may be relied on for land information supply.

Table 9.8: PSLISs self-report rating on efficiency knowledge

Sub-component of knowledge of cost saving technique rated:	Mean	Std. Dev.	Std. Error	Med.	Mode	r_{WG}	$p < .01$
Compiling data	3.8824	0.9980	0.0988	4	4	0.50	0.34
Processing data	3.9706	1.0384	0.1028	4	5	0.46	
Keeping land records	3.9216	1.0872	0.1076	4	5	0.41	
Information dissemination	4.0490	0.9374	0.0928	4	4	0.56	
Up-dating information daily	3.9902	1.1124	0.1101	4	5	0.38	

The median score of 4 means that there is an agreement among raters that they possess knowledge on each efficiency item rated. For an interpretation of median ratings with confidence, r_{WG} values for each of the self-reported rating on possession of aspects of cost saving knowledge (0.50, 0.46, 0.43, 0.56, and 0.38) exceed 0.34 at $p < 0.01$. This is evidence of significant agreement among the ratings that potential private sector information suppliers possess adaptive knowledge required in competition for harnessing of land information.

9.5 PRACTICAL KNOWLEDGE FOR COMPETITION

The standard deviation relative to corresponding mean self-reported ratings in Table 9.9 gives an overall indication of little variability in the self-reported rating data from inspection of the first and second columns of the Table. Similarly, the standard errors relative to the corresponding mean ratings are also relative to the sample means are close to zero and this appears to buttress the point that the sample chosen is likely to be an accurate reflection of the population.

Table 9.9: PSLISs self-report rating on degree of possession of practical knowledge

Degree of possession of practical knowledge.	Mean	Std. Dev.	Std. Error	Median	Mode	r _{WG}	p < .01
Market knowledge	4.3922	0.8462	0.0838	5	5	0.68	0.34
Adaptive Knowledge	4.0882	0.7980	0.0860	4	4	0.66	
Effectiveness knowledge	4.1765	0.8721	0.0863	4	4	0.65	
Efficiency knowledge	3.9118	1.1354	0.1124	4	5	0.49	
Practical knowledge	4.4225	0.7566	0.0865	4	4	0.72	

From Table 9.9, the median tends to be closer to both mean and mode. Thus, self-reported rating with median of 5 score for possession of market knowledge with (std. dev. = 0.8462, mean = 4.3922, mode = 5), represents a consensus among raters that they “strongly agree” possess market knowledge that can be used in competition for supply of standard land information in UREMs.

For adaptive knowledge (with std. dev. = 0.7980, mean = 4.0882, mode = 4), effectiveness knowledge (with std. dev. 0.8721, mean = 4.1765, mode = 4) and efficiency knowledge (with std. dev. = 0.9374, mode = 5), the median ratings of 4 throughout represents a consensus among raters that they “agree” to possess practical knowledge that can be used for supply of standard land information in UREMs. Thus, in order for all median ratings to be interpreted with confidence, r_{WG} values for all the

items rated exceed 0.34 at $p < 0.01$. This is evidence of significant agreement among the ratings that potential information supplies possess practical knowledge likely to be utilised in competition for supply of land information in UREMs.

9.6 UTILISATION OF PRACTICAL KNOWLEDGE

The standard deviations relative to their means in Table 9.10 shows that the standard deviations are small relative to their respective means. This gives an impression that the mean represents the data whereas the median represents the exact data point on the Likert scale.

Table 9.10: PSLISs self-reporting rating on utilisation of knowledge in competition

Utilisation of type of knowledge possessed:	Mean	Std.	Std. Error	Median	Mode	r _{WG}	p <.01
Market knowledge	4.3922	0.7980	0.0790	4	5	0.73	0.34
Adaptive Knowledge	4.0882	0.9345	0.0925	4	4	0.66	
Effectiveness knowledge	4.1765	0.8721	0.0775	4	4	0.69	
Efficiency knowledge	4.0396	0.9583	0.0949	4	4	0.65	
Economic knowledge	4.2843	0.7496	0.0749	4	4	0.72	

Similarly, the standard errors observed in the data in Table 9.10 are close to zero and appear small relative to their respective corresponding means. This suggests that the sample chosen is likely to be an accurate reflection of the population.

From the Table, the median, mean and mode generally tend to be closer to each other. Thus, self-reported rating with median of 4 score for utilisation of market knowledge (with std. dev. = 0.7980, mean = 4.3922, mode = 5), utilisation of adaptive knowledge (with std. dev. = 0.9345, mean = 4.0882, mode = 4), utilisation of effectiveness knowledge (with std. dev. = 0.8721, mean = 4.1765, mode = 4), and efficiency knowledge (with std. dev. = 0.9583, mean = 4.0396, mode = 4) represents a consensus among raters that they “agree” to possessing practical knowledge likely to be utilised in competition for supply of standard land information in UREMs. For purposes of all

mean values proxied on median ratings on the Likert scale to be interpreted with confidence, r_{WG} values for all the items rated exceed 0.34 at $p < 0.01$. This is evidence of significant agreement among the ratings that potential information supplies possess practical knowledge likely to be utilised in competition for the supply of land information in UREMs.

9.7 METHODS OF HARNESSING LAND INFORMATION

From Table 9.11 the mean ratings are consistently close to the median rating scores for each item on the rating scale. The relatively small standard deviations compared to the mean rating scores suggests that the ratings are also consistently close to the mean. Hence, adopting the median equally reflects the use of the means. The standard errors associated with all the means ratings are also relatively close to zero and this gives an indication that the sample chosen is likely to be an accurate reflection of the population.

Table 9.11: PSLISs rating on method to harness land information

Perception about an appropriate information supply method:	Mean	Std. Dev.	Std. Error	Med.	Mode	r_{WG}	.05	.01
Resourcing public service bureaus as profit enterprise	3.5588	1.1905	0.1179	4	4	0.29	0.26	0.34
Public Private Partnership	4.1275	0.8751	0.0866	4	4	0.62		
Private sector providing management services	3.5882	1.0469	0.1037	4	4	0.45		
Outsourcing specific services to the private sector	4.0392	0.8196	0.0812	4	4	0.66		

Each of the subcomponent rated above is discussed in turns as follows.

9.7.1 Resourcing Public Sector Land Agencies

The median rating score of 4 that government resourcing public sector land administration agencies to function as a profit making enterprise (with std. dev. = 1.1905, mean = 3.5588, mode = 4) represents a consensus that raters agree on this as a method of ensuring efficient supply of standard land information in UREMs. In order for the median ratings to be interpreted with confidence, r_{WG} values for rating on this

method is less than 0.34 at $p < 0.01$. This is evidence of significant disagreement among the ratings that government resourcing public sector land agencies is an option to be considered to ensure standard supply of land information in UREMs. However, lowering the confidence interval, r_{WG} values for suppliers' agreement on this method exceed 0.26 at $p < 0.05$. This implies that there is evidence of agreement among raters as $p < 0.05$.

9.7.2 Public Private Partnership (PPP)

The median rating score of 4 for PPP as an alternative method for supply land information (with std. dev. = 0.8751, mean = 4.1275, mode = 4) represents a consensus that raters agree on this a method of ensuring efficient supply of standard land information in UREMs. In order for the median ratings to be interpreted with confidence, r_{WG} values for all the items rated exceed 0.34 at $p < 0.01$. This is evidence of significant agreement among the ratings that a PPP is likely to ensure a reliable supply of standard land information in UREMs.

9.7.3 Private Sector Management Services

The median score of 4 for private sector entities providing management services to PSLAAs (with std. dev. = 1.0469, mean = 3.5882, mode = 4) represents a consensus among raters that they "agree" to this method as a means of ensuring supply of standard land information. To interpret with confidence the median ratings, r_{WG} values for all the items rated exceed 0.34 at $p < 0.01$. This is evidence of significant agreement among the ratings that private sector involvement through management services is likely to ensure a reliable supply of standard land information in UREMs.

9.7.4 Outsourcing Specific Services to the Private Sector

The median rating score of 4 for outsourcing specific services as an alternative method for supply land information (with std. dev. = 0.8196, mean = 4.0392, mode = 4)

represents a consensus that raters agree on this a method of ensuring supply of standard land information in UREMs. However, in order for the median ratings to be interpreted with confidence, r_{WG} value all ratings on the item exceed 0.34 at $p < 0.01$. This is evidence of significant agreement among the ratings that outsourcing is likely to ensure a reliable supply of standard land information in UREMs.

9.9 MULTINOMIAL LOGISTIC REGRESSION ANALYSIS

This study used multinomial logistic regression model (MLRM) to predict the likelihood of potential private sector land information suppliers competing in harnessing land information given that they possess relevant practical knowledge (predictor variables). The model is based on sample data of self-report rating responses by potential land information suppliers to verify ETK propounded by Hayek (1945). The model is based on standard multinomial logistic regression model formula as $\text{Prob}(C) = \frac{\exp(x_i\beta_c)}{\sum_c \exp(x_i\beta_c)}$ where, $\text{Prob}(C)$ is the probability of belonging to outcome group of to compete, not to compete, and don't know whereas x_i is the vector of predictor variables and β_c are the coefficients estimated using the maximum likelihood estimation. Field (2009) provides insights and guides on analysis and interpretation of multinomial logistic regression models.

9.9.1 Likelihood to Compete and Selected Variables

In order to understand the pattern of relationship between the likelihood to compete and selected variables (MKTK, ADATK, EFFCK) and also to identify those variables that have significant effect on the likelihood choice to compete, multinomial logistic regression model was employed. For the multinomial logistic regression to be true, the rules of thumb are:

- (i) There must be no evidence of numerical problems and as a result of this the model was corrected by removing one variable namely effectiveness knowledge;
- (ii) Overall relationship must be statistically significant subject to likelihood ratio test;
- (iii) The classification accuracy rate must be substantially better than could be obtained by chance alone as shown in the classification table; and
- (iv) The stated individual relationship must be statistically significant and interpreted correctly.

Hence, results obtained are presented as follows.

9.9.2 Model Fitting Information

Table 9.12 shows the Model Fitting Information, which provides various indices for assessing the intercept only model (null model) and the final (or full) model which includes all the predictors and the intercept. The -2 Log Likelihood (-2LL) should be lower for the full model than it is for the null model; lower values indicate better fit 20.953 (our full model), and 133.790 (our null model).

Table 9.12: Model Fitting Information

	Model Fitting Criteria			Likelihood Ratio Tests		
Model	AIC	BIC	-2Log Likelihood	Chi-Square	Df	Sig
Intercept only	137.790	143.040	133.790			
Final	48.953	85.702	20.953	112.838	12	.000*

Source: Computed from Data, 2013

0.00-0.01 * Chi-square significant at 1%
 0.02-0.05 * * chi-square significant at 5%
 0.06-0.10 *** Chi-square significant at 10%.

The significant test for the model chi-square in the model fitting information established the presence of a relationship between the dependent variable and combination of

independent variables. In Table 9.12, the probability of the model chi-square (112.838) is 0.000. Since this is significant at 1%, it, therefore, supports the presences of a relationship between the dependent variable and combination of independent variables. The model fit is significant $\chi^2 (12) = 112.838, p < .01$, which indicates the full model predicts significantly better or more accurately than the null model. To be clear, one wants the p -value (0.000 in this case) to be less than the established cut-off (generally 0.05) to indicate good fit.

9.9.3 Classification Accuracy

Multinomial logistic regression does not compute correlation measure to estimate the strength of relationship that tells us about the accuracy or error associated with the model. In this regard, one has to depend on classification accuracy which compares predicted group membership to actual group membership (it shows how well our full model correctly classifies cases). Computing the proportion by chance accuracy rate is done by calculating (squaring and summing) the proportion of cases for each group based on the number of cases in the “Case Processing Summary” (see Table 9.14), $(0.725^2 + 0.206^2 + 0.069^2 = 0.573)$.

The proportion by chance accuracy criteria is therefore $(1.25 \times 57.3\% = 71.6\%)$. The classification accuracy rate from Table 9.13 below is 93.1%. This accuracy rate is greater than the proportional by chance accuracy criteria of 71.6%. The criterion for classification accuracy has, therefore, been satisfied. It is worth noting that 1.25 = the 25% improvement over the rate of accuracy achieved by chance alone, which is the benchmark used to characterise a multinomial logistic regression.

Table 9.13: Classification

Observed	Predicted			
	YES	DON'T KNOW	NO	Percent correct
YES	72	2	0	97.3%
DON'T KNOW	2	18	1	85.7%
NO	2	0	5	71.4%
Overall Percentages	74.5%	19.6%	5.9%	93.1%

Source: Computed from Data, 2013

0.00-0.01 * Chi-square significant at 1%

0.02-0.05 * * chi-square significant at 5%

0.06-0.10 *** Chi-square significant at 10%

Table 9.14: Case processing summary

		N	Marginal Percentage
COMPTN	'YES'	74	72.5%
	'DONTKNOW'	21	20.6%
	'NO'	7	6.9%
MKTK	'YES'	78	76.5%
	'DONTKNOW'	17	16.7%
	'NO'	7	6.9%
ADATK	'YES'	76	74.5%
	'DONTKNOW'	18	17.6%
	'NO'	8	7.8%
EFFCK	'YES'	68	66.7%
	'DONTKNOW'	25	24.5%
	'NO'	9	8.8%
Valid		102	100.0%
Missing		0	
Total		102	
Sub-population		19 ^a	

9.9.4 Likelihood Ratio Test

The statistical significance of the relationship between likelihood to compete and each of the independent variables is based on the statistical significance of the chi-square

statistic in the likelihood ratio tests in Table 9.15. From the result that follows, only ADATK and EFFCK have a statistically significant relationship with the dependent variable ($0.00 < 0.05$), that is, the choice of whether to compete or not can be explained by ADATK and EFFCK.

Table 9.15: Likelihood Ratio Test

Effect	Model Fitting Criteria			Likelihood Ratio Tests		
	AIC of Reduced Model	BIC of Reduced Model	-2Log Likelihood of Reduced Model	Chi-Square	df	Sig
Intercept	48.953	85.702	20.953 ^a	.000	0	
MKTK	46.991	73.241	26.991	6.039	4	.196
ADATK	62.652	88.902	42.652	21.699	4	.000*
EFFCK	139.402	165.652	119.402 ^b	98.449	4	.000*

Source: Computed from Data, 2013

0.00-0.01 * Chi-square significant at 1%

0.02-0.05 * * chi-square significant at 5%

0.06-0.10 *** Chi-square significant at 10%

9.9.5 Pseudo R-Square Test

Table 9.16: Pseudo R-Square

Cox and Snell	.669
Nagelkerke	.865
McFadden	.745

The Cox and Snell's R-Square is a measurement that seeks to imitate R^2 measurement in a multiple regression. However, with difficulty in interpretation due to its estimation technique with a maximum value of less than 1 (one), the Nagelkerke R-Square is introduced as a modification to the Cox and Snell coefficient to ensure that its value varies from 0 (zero) to 1 (one). Hence, the value of Nagelkerke R-Square can be interpreted as the R^2 in multiple regressions. From the SPSS output in Table 9.16 above, the value for Cox and Snell is 0.669 and Nagelkerke R-Square value is 0.865. This means that the variability of competition as the dependent variable can be explained by

the variability of the ADATK and EFFCK as independent variables by 86.5%, and the rest is explained by variables outside the model.

9.9.6 Factors Affecting Likelihood to Compete

Table 9.17 further explains the relationship between the dependent and the independent variables identified as significant above (ADATK and EFFCK). The parameter estimates, however, show that both do not play a statistically significant role in the decision of entrepreneur to compete (YES) (reference group) and prospective land information suppliers indecision “DONTKNOW” (0.984, 0.985, 0.269 are all > 0.05). They also have no statistically significant role in the decision of entrepreneur to compete (YES) (reference group) and not to compete (NO) (0.983, 0.989, 0.773 are all > 0.05). For both of them one can say there is no statistically significant relationship between the dependent and independent variables, since their probabilities are greater than 0.05. However, the signs show the existence of a relationship between them, this is summarised in Table 9.17.

Table 9.17: Parameter Estimates

COMPTN ^a	B	Std. Error	Wald	Df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
'DONTKNOW'								
Intercept	45.578	2535.737	.000	1	.986	8.139E-008	.000	.b
[MKTK=1.00]	-16.324	1136.447	.000	1	.989	6.537E-007	.000	.b
[MKTK=2.00]	-14.241	1136.447	.000	1	.990	1.804E-014	.000	.b
[MKTK=3.00]	0c	.	.	0	.	.	.	.
[ADATK=1.00]	-31.646	1603.776	.000	1	.984	1.226E-013	.000	.b
[ADATK=2.00]	-29.730	1603.776	.000	1	.985	6.961E-014	.000	.b
[ADATK=3.00]	0c	.	.	0	.	.	.	.
[EFFCK=1.00]	-30.296	1603.775	.000	1	.985	7.832	.000	300.308
[EFFCK=2.00]	2.058	1.861	1.224	1	.269		.204	
[EFFCK=3.00]	0c	.	.	0	.	.	.	.
'NO'								
Intercept	46.316	2535.737	.000	1	.985	5.813E-007	.000	.b
[MKTK=1.00]	-14.358	1136.447	.000	1	.990	9.268E-007	.000	.b
[MKTK=2.00]	-13.892	1136.448	.000	1	.990		.000	.b
[MKTK=3.00]	0c	.	.	0	.	.	.	.
[ADATK=1.00]	-33.458	1603.777	.000	1	.983	2.946E-015	1.864E	1.864E-
[ADATK=2.00]	-52.336	.000	.	1	.	1.864E-023	-023	023
[ADATK=3.00]	0c	.	.	0	.	.	.	.
[EFFCK=1.00]	-48.282	3635.362	.000	1	.989	1.075E-021	.000	.b
[EFFCK=2.00]	.530	1.837	.083	1	.773	1.698	.046	62.174
[EFFCK=3.00]	0c	.	.	0	.	.	.	.

Source: Computed from Data, 2013

* Chi-square significant at 1%, * * chi-square significant at 5% and *** Chi-square significant at 10%

9.9.7 Summary of Results on Multinomial Logistic Regression Model

Results presented in preceding section shows that a decision to compete is more likely to be influenced by adaptive knowledge (ADATK) and efficiency knowledge (EFFCK).

The result of the multinomial logistic regression is summarised below.

- Significance of ADATK and EFFCK in the log likelihood ratio confirms the existence of a relationship between decisions to compete in land information supply based on adaptive knowledge (ADATK) and efficiency knowledge (EFFCK). Each of these variables is reported in turns as follows.

ADATK

- Although the parameter estimate shows that this variable does not play any direct role in the decision to compete, the negatively signed coefficient means that entrepreneurs who have the knowledge are more likely to use it to compete if a policy of deregulation is introduced. That is, the multinomial log-odd of not deciding anything (DONTKNOW) would be expected to decrease by 31.646 and 29.730. Impliedly, this is more likely to occur if competition becomes dynamic through the price system in a deregulated regime and also the price system starts to play its signalling role.
- Under the second part of Table 9.17, the multinomial log-odd of not competing at all (NO) would also be expected or more likely to decrease by 33.458 and 52.336 if a deregulation policy is to be introduced. All things being equal, the likely implication here is that as the price system through competition begins to communicate economic information/knowledge about changes in the market, some entrepreneurs with adaptive knowledge who are not competing are more likely to be incentivised to compete.

EFFCK

- In the upper part of Table 9.17 (DONTKNOW), the parameter estimate shows that efficiency knowledge does not play direct role in a decision to compete since it is not significant but the negatively signed coefficient (EFFCK=1.00) indicates an inverse relationship which means that entrepreneurs who have the knowledge are more likely to use it if competition under the price system is dynamic and the price system is communicating the relevant knowledge in the market. That is, the multinomial log-odd of not deciding anything (DON'T KNOW) is more likely to decrease by 30.296 if new knowledge about an efficient method of supplying land information is communicated by the price system in the land information supply market.
- On the other hand, the positively signed coefficient (EFFCK=2.00) indicates that entrepreneurs who have the knowledge but don't know whether they will utilise it are more likely not to compete in a deregulated land information supply regime. That is, the multinomial log-odd of not deciding to compete (DON'T KNOW) would be expected to increase by 2.058. This may imply that even if the price system is communicating new knowledge, entrepreneurs who possess efficiency knowledge are more likely not to compete.
- In the second part Table 9.17 as (NO), the parameter estimate shows that this variable does not play any direct role in the decision to compete since it is not significant but the negatively signed coefficient (EFFCK=1.00) means that entrepreneurs who have the knowledge and are more likely to compete in the future. That is, the multinomial log-odd of not competing (NO) would be expected to decrease by 48.282 and all things being equal, the price system through competition is communicating relevant market information under a deregulated policy regime.

- The positively signed coefficient (EFFCK=2.00) indicates that entrepreneurs who have the knowledge but don't know whether they will use it are more likely not to compete. That is, the multinomial log-odd of not competing (NO) would be expected to increase by 0.530. This may imply that even if all things being equal and the price system is signalling about opportunities for utilisation of efficiency knowledge, these entrepreneurs are more likely not to compete.

The following are the implications of the findings under the Multinomial Logistic Regression Model used for the study.

1. The significant test for the model chi-square in the model fitting information established the presence of a relationship between likelihood to compete and combination of all the knowledge types.
2. The classification accuracy rate is 93.1% and this is greater than the proportional by chance accuracy criteria of 71.6%. The criterion for classification accuracy has, therefore, been satisfied.
3. It has also shown that ADATK and EFFCK are the only variables that has a statistically significant relationship with the dependent variable ($0.00 < 0.05$), that is, the choice of whether to compete or not can be explained by ADATK and EFFCK.
4. The parameter estimates shows no statistically significant (causal relationship) between the dependent and the two independent variables (ADATK and EFFCK). However, the signs show the existence of a relationship between them.
5. For ADATK, the negatively signed coefficient means that an entrepreneur who has the knowledge and willing to use it are more likely to compete.
6. For EFFCK, an entrepreneur who has the knowledge and willing to use it may likely compete but those who have the knowledge but don't know whether they will use it are more likely not to compete.

7. With adaptive knowledge, the implication is that there is a likelihood that market response knowledge about using market networks, relevant inputs, capital required, labour required, and technical know-how to supply land information will be utilized in competition to ensure healthy flow of land information (see Table 9.15).
8. Regarding efficiency knowledge, the implication also is that there is a likelihood of cost-saving technique knowledge about compiling data, recording data, keeping land records, information dissemination, and keeping up-to-date information daily will be utilised in competition to ensure healthy flow or supply of land information.

9.13 FINDINGS AND ANALYSIS

The Multinomial Logistic Regression Model provides sufficient evidence that there is a relationship between practical knowledge and competition. The model predicts the likelihood of two types of knowledge namely adaptive and efficient knowledge possessed by potential private sector land information suppliers that is more likely to be used in competition in land information supply in UREMs in Ghana. Thus, with UREMs, the analysis and results suggests that dynamic completion in supply of land information has a significant relationship with utilisation of adaptive knowledge and efficiency knowledge that is possessed but dispersed among many private sector entrepreneurs. Hence, it is more likely that it is utilisation of this knowledge under competition that distinguishes practical land administration knowledge from technical land administration knowledge possessed by bureaucrats.

The findings above are consistent with propositions in ETK that the price system that emerges from a market process performs two functions that are likely to apply to land information supply in UREMs if the system is allowed to work through competition.

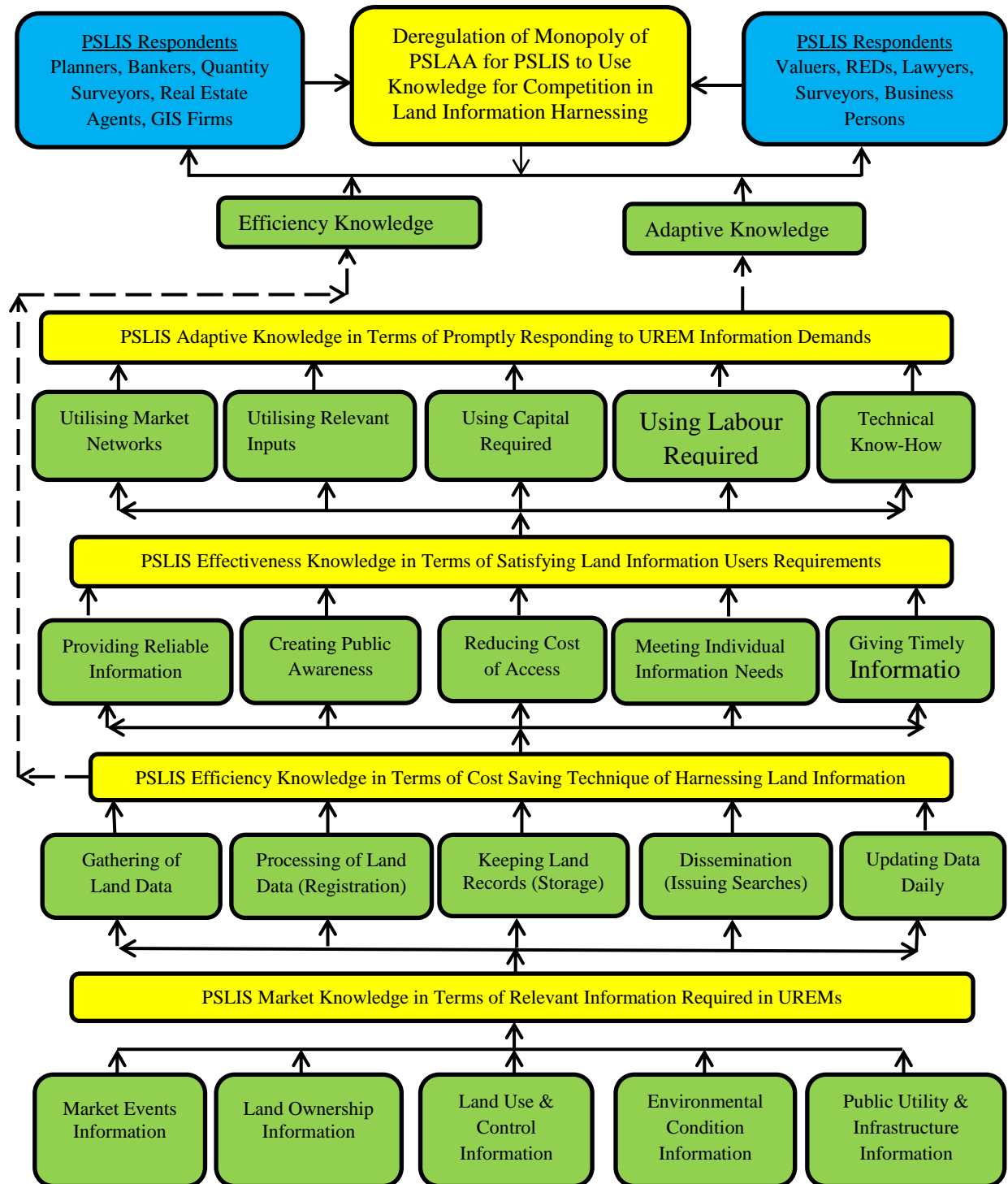


Figure 9.1: Framework established based on research findings on PSLISs

First, the kind of streams of knowledge more likely to be coordinated, communicated and discovered and used under the price system is information about changes in the market which requires adaptive knowledge and also efficiency knowledge to ensure the least cost of supplying land information (Boettke, 1989; Caldwell, 1997; Oguz, 2000; Pennington, 2004). This is likely to be consistent with the role of the price system serving as a means of coordinating bits and pieces of economic knowledge possessed by participating PSLISs, which is used as the reference point that allows an entrepreneur to take advantage of knowledge of other entrepreneurs for price formation (Hayek, 1945; Guest, 1997; Birner and Ege, 1999; Vaughan, 1999; Birner, 2002; Heath, 2007; Leppäällä, 2012; Brock, 2013).

Second, having coordinated the knowledge and economic actions of individuals, the price system plays an informational role by communicating signals about market events to markets dealers. The events include wants in the market (Market Demand Knowledge), the extent to which the wants are desired and are to be satisfied (Effectiveness Knowledge), as well as the profit and loss signals which lead to learning and spread of information for decision making in terms of how to bring price of production equal to cost (Butler, 1983; Vaughan, 1999; Snow, 2002; Beaulier et al., 2005; Heath, 2007; Boetke, 2007; Brock, 2013). Summarily, if these signals are to prevail, it is more likely that private sector information suppliers will identify these opportunities for action to supply information required to bring information symmetry into the market.

Indeed, focal literature suggests that the signals are likely to enable suppliers to know how to allocate resources such as time, labour, and capital (Adaptive Knowledge) based on their local knowledge to satisfy the demand of others (Hayek, 1945; Vaughan, 1999; Beaulier *et al.*, 2005). Thus, given that the price system is allowed to work for the

supply of land information in UREMs, these are the likely signals to be received by suppliers to ensure healthy flow of land information and wide access to the information at a reduced cost as indicated by the downward sloping demand curve established from demand side analysis (see Chapter 8). Thus, the model appears to suggest that with deregulation of monopoly over supply of land information, there is a likelihood that adaptive knowledge and efficiency knowledge may be utilised in competition in harnessing land information in a cost-effective manner in UREMs in Ghana.

9.14 SUMMARY OF CHAPTER

This chapter tests ETK via quantitative research methodology. The outcome of the test suggests two key findings. First, like LIUs, PSLISs identified information on type of property, type of interest and value of land as types of market information most required for transactions in UREMs. With tenure information, PSLISs identified proprietary owner information, litigation status, and government interest as the relevant tenure information most required. This buttresses the point that these are the essential information required to tackle information asymmetry in UREMs.

The second outcome of the test suggests that efficiency knowledge and adaptive knowledge are the two main types of knowledge that are likely to be used in competition in land information supply in UREMs in Ghana. With this outcome, the chapter has contributed in addressing the fourth research objective, which was to quantitatively assess the relationship between competition and knowledge. Thus, the test was about finding out whether monopoly is a barrier to the use of economic knowledge for production of goods and services. Out of the four types of knowledge identified in relation to ETK, two namely efficiency knowledge and adaptive knowledge are the relevant knowledge that has a relationship with competition. The key finding,

therefore, is that with the removal of monopoly, PSLISs are like to compete in land information harnessing.

CHAPTER TEN

SUMMARY OF RESEARCH FINDINGS AND VALIDATION

10.0 INTRODUCTION

This chapter fulfils the sixth research objective by validating the research findings and reporting on comments received on a land information harnessing framework developed based on the findings. The policy implications of the research findings validated and the framework developed are also discussed. First, the chapter presents a summary of the research findings followed by an over view of the concept of validation. This is followed by validation methodology explored namely internal and external validation for the validation process. The context within which the validation was done is discussed. Finally, a bespoke framework for harnessing land information in a competitive regime is developed and proposed for policy recommendation.

10.1 SUMMARY OF RESEARCH FINDINGS

The foundation of the research was provided in Chapter One, which outlined the research questions, aim and objectives of the research. A recall of the research questions are as follows:

1. What are the sources and causes of information asymmetry information asymmetry in real estate markets?
2. Why is information asymmetry persisting in urban real estate markets in Ghana?
3. What needs to be done to effectively tackle information asymmetry in order to bring information symmetry into urban real estate markets?
4. Why is competition a more reliable economic method to adopt for responsive supply of land information in urban real estate markets?
5. What is the relevant information required to bring information symmetry among urban real estate markets dealers?

6. How practicable can competition in harnessing of land information be relied on as a method in the context of Ghana?

The preceding research questions were addressed by the six research objectives set to achieve the aim of the study (see Table 1.2).

With the aim of assessing whether competition in land information harnessing can be used to tackle the problem of information asymmetry in UREMs, the first objective of the study was to develop deeper understanding of potential sources and causes of information asymmetry in real estate markets by reviewing focal literature (Chapter Two). Reviewing literature related to LIS, it was found that land registration systems that do not have wider coverage tend to undermine the land information systems. Also, in countries that citizens do not have access to quality information in terms of contents and quantity on one hand and lack of quality access to land information, information asymmetry is often the norm rather than an exception. Thus, inefficient LIS serve as the source of information asymmetry.

The second research objective focused on tracing the origin and reason for persistence of the problem of information asymmetry in UREMs in Ghana. Based on a systematic review of focal literature (see Chapter Three), this study finds that information asymmetry in UREMs in Ghana started with the concession boom during the 19th century when the need for mining and timber concessions arose in southern forest belt of the country. However, the problem was identified as insecurity and high litigation costs in dealing with lands. Since then, attention has been on tackling uncertainty and high litigation costs and to the neglect of information asymmetry, which appears to be the root cause of these twin problems in UREMs in Ghana. Hence, many interventions have focused on the symptom. This finding, therefore, addressed the second research objective.

Following up with the third research objective of identifying from theory the role of economic knowledge in society and why competition is better than monopoly in land information harnessing, EKT propounded by Hayek (1945) was explored (Chapter Four). ETK explained that economic knowledge is a neglected factor of production in society. Hence, in the absence of its utilisation, many efforts to deliver services or produce goods can go waste. The theory identified entrenched monopoly as depending on expert knowledge whereas competition depends on economic knowledge to deliver efficient and effective services. Theoretical insights gleaned from EKT suggested that monopolisation is a potential cause of the inefficient flow of land information because economic knowledge plays little or no role in the monopolist set up. A theoretical framework in Chapter Four was therefore, formulated followed by the development of a conceptual framework in Chapter Five that fits into an UREM environment and for verification of ETK.

To address the fourth research objective of assessing by quantitative approach the relationship between competition as dependent variable and knowledge as independent variable, primary data was collected from potential PSLISs and tested using a multinomial logistic regression model (see Chapters Six and Nine). The outcome is that efficiency and adaptive knowledge emerged as the relevant knowledge required from PSLIS in a competition environment. No significant relationship was found between market knowledge and effectiveness knowledge and competition (Chapter Nine). Thus, competition in land information harnessing is likely to result in the smooth flow of land information that satisfies the needs of information users.

The fifth research objective was to determine empirically by verifying from stakeholders relevant information required for information symmetry to prevail and how this can happen in UREMs in Ghana. Chapters Seven, Eight and Nine each contributed

in fulfilling this objective. Regarding the kind of information that needs to be harnessed to ensure information symmetry, LPOs, LIUs and PSLISs all identified information about market events in terms of what is available for sale and what are the interests in the property as the most required information. In terms of land tenure information, name of owner, litigation status, government interest, and if necessary, principal witnesses to the customary grantor are the most required information for transactions in the UREM.

Altogether, the key findings are highlighted as follows.

- The relevant information required to tackle information asymmetry in the UREM is the smooth flow and effective use of all-in-one land information..
- LPOs agree to a more effective participation by PSLISs in land information harnessing but not disagree with privatisation of land information service delivery.
- Land information users perceive PSLISs are capable of gathering land data and dissemination but not sure of to process and keep land records.
- There is an inverse relationship between demand and price for land information and that supply at a lower competitive cost is likely to increase access and use of land information by the public.
- Competition is likely to result in improved awareness, less costly and timely access, innovation and responsive information supply.
- Potential PSLISs possess cost efficient entrepreneurial knowledge relevant for land information harnessing.
- Potential PSLISs are likely to use cost efficient and adaptive knowledge in competition in the event of deregulation of land information supply.
- Restructuring of the land sector agencies has brought inertia in land information service delivery.

The findings stated above are based on five of the research objectives set for the study. This chapter, therefore, addresses the sixth research objective, which is to first, validate the research findings and second, seek comments from respondents on how feasible is a framework developed for land information management based on the study. Hence, succeeding discussions focus on the research validation process and outcome. Also, comments and discussions on the feasibility of the framework developed based on the findings are presented. Finally, a framework for possible policy consideration to setting up of a specialised Division of the LC namely LIMD as a landed property data bank complemented by competition by PSLISs in land information harnessing in UREMs is proposed.

10.2 FEASIBILITY OF PROPOSED FRAMEWORK

A framework for competition in land information harnessing informed by theory and findings from this research as well as focal literature was developed for comments by validation respondents. The objective was for respondents to examine the feasibility of the proposal in the context of UREMs in Ghana and to provide feedback on whether the framework is feasible or not. The proposed framework was attached to the questionnaire with detailed but concise background information. The thesis version of an outline of a diagram indicating how the framework, which is highlighted in blue in Figure 10.1 yet to be shown, was developed. Twelve out of the 13 respondents gave feedback on the framework and these are presented after Figure 10.1. Apart from theoretical insights and focal literature, chapters that informed the development of the framework are indicated in the diagram.

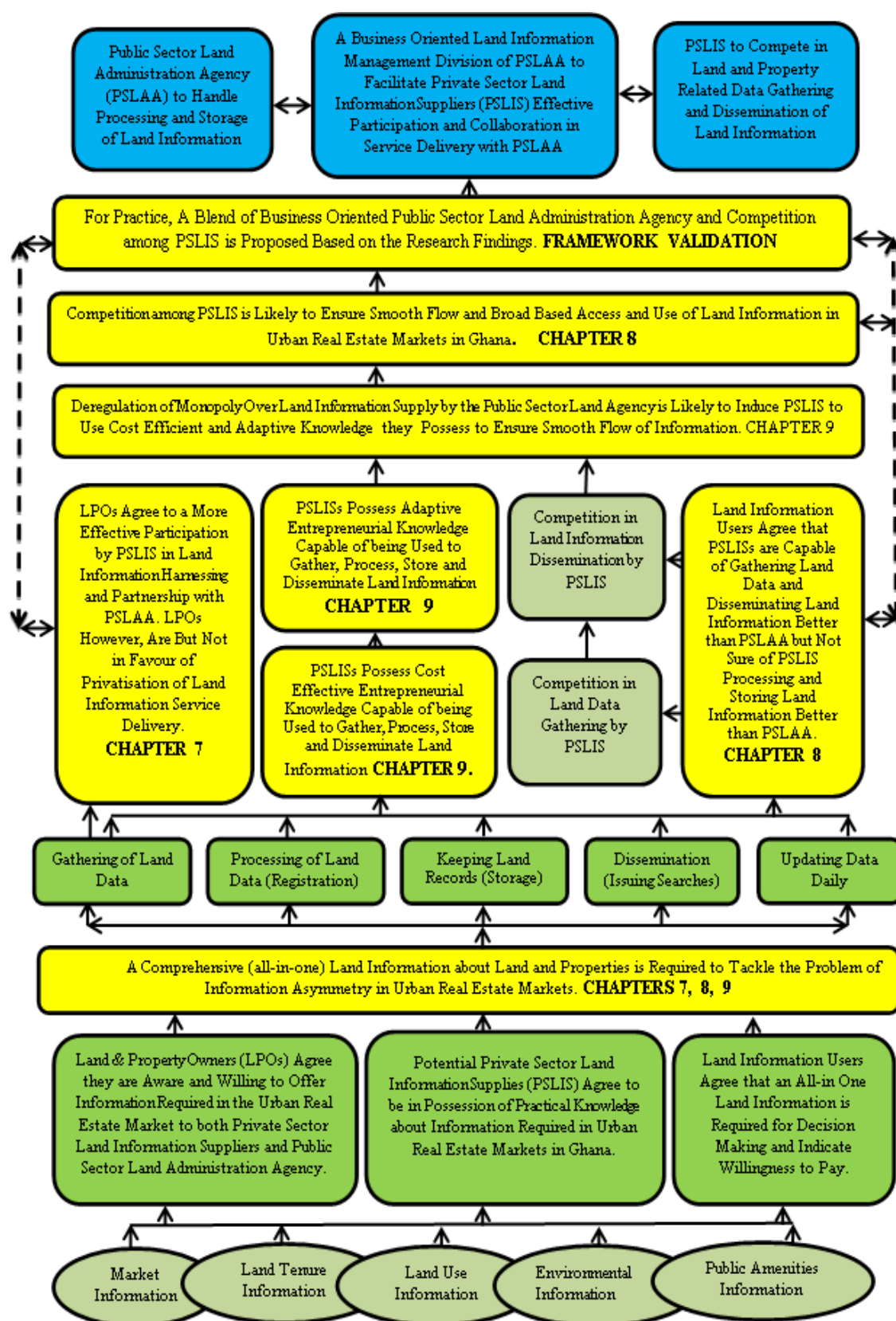


Figure 10.1: Framework for validation of research findings

10.3 RESEARCH VALIDATION PROCESS

First, a generic over view of the concept of validation is presented. Like in a scientific enquiry, establishing validity in the social sciences ideally involves precision, realism, and generalizability as three required traditional standards (Brinberg and McGrath, 1985; Strickler, 1999). Precision in this case means the accuracy of the measurement taken and the degree to which the researcher is able to control variables in the research environment. Realism looks at the social context or the extent to which the environment in which the data collected reflects normal circumstances under which the behaviour observed occurs. Generalizability implies the degree to which the data collected from respondents in a sample are applicable to the larger population under study (Brinberg and McGrath, 1985; Strickler, 1999). Strickler (1999) argues that each of these three requirements can cancel out the other and in order to minimise any shortcomings, a pluralistic or triangulated approach to data gathering must be adopted.

Indeed, Mathison (1988) argues that irrespective of the philosophical, epistemological, or methodological perspective a researcher is coming from, good research practice obliges the researcher to triangulate research methods, data sources, and researchers in order to enhance the validity of research findings. This is because, triangulation as a strategy helps improve on the validity of research via elimination of bias or evaluation of research findings (Mathison, 1988). Considering the research process followed in Chapters Six, Seven, Eight, and Nine, and using UREMs as the study context as well as market participants as the respondents, one can argue that to a large extent that precision as the ideal and realism have been reasonably met. However, acknowledging that precision and realism may involve certain factors far beyond control of the researcher in social sciences context, generalisation appears to be a more forward looking approach to the researcher for validating research findings.

In order to generalise, however, there are four key requirements that needs to be established. Cook and Campbell (1979) mention these as follows:

- i) Validity of research construct;
- ii) Validity of statistical findings;
- iii) External validity; and
- iv) Internal validity (Shadish *et al.*, 2000; Manu, 2012).

First, validity in terms of research construct has been established through the pilot stage of the questionnaires that was used for the study as discussed earlier (Chapter Six). Second, the validity of the statistical findings has also been addressed through inferential statistics discussed earlier on (Chapters Eight and Nine). In view of these, subsequent discussions in this chapter focus on external and internal validation. Restricting the validation to these two, is found in tandem with Whitemore *et al.* (2001) that internal and external validity in quantitative research are required for generalizability of research findings. Hence, for validation was carried out for purposes of confirmation or disconfirmation of the research findings. Nevertheless, the validation process was used to elicit opinions and comments about the feasibility of the framework developed based on the research findings. External respondents were relied on to validate the findings.

10.4 EXTERNAL VALIDATION

To validate as noted by Kvale (1989) is to investigate, to check, to question, and to authorise (Morse *et al.*, 2002). To perform the task of validation, at least five techniques have been identified for conducting external validation (Snee, 1977; Brinberg and McGrath, 1985; Good and Hardin, 2003; Field, 2005; Ahadzie, 2007). Ahadzie (2007) summarises these as follows:

- (i) Using independent verification obtained by waiting until the future arrives or through the use of surrogate variables;
- (ii) Splitting the sample size and using one part for estimating the model and other data set as a ‘‘hold back’’ for validation;
- (iii) Re-sampling and taking repeated samples from the original sample and refilling the model each time;
- (iv) Using Stein’s equation of recalculating the adjusted coefficients of determinants (R^2); and
- (v) Approach experts to comment on relevant aspects of research including benefits.

From the above, the experts and re-sampling approaches appear more appropriate for this research for the following reasons. First, in view of resource constraints, particularly with finance and time, the option of independent verification at a later time in the future could not be explored. Secondly, the Stein’s equation although can be explored, this will require collecting an entirely different data set. This is a challenge for reasons of costs and time constraints. Thirdly, the hold back approach could not be used given that the design of the study ensured collection of data adequate for one off use and not to split and hold some back. Thus, choosing the expert opinion validation approach, five bureaucrats of which three are in active service and two are retired but practicing as estate management and land administration consultants gave feedbacks on the questionnaire. Using the re-sampling approach, eight respondents gave a feedback out of 12 that were sampled. Table 10.1 provides the breakdown.

10.4.1 Background of Validation Respondents

For purposes of discussions, the respondents are labelled as bureaucrats and consultants. Table 10.1 provides the list and background of validation respondents.

Table 10.1: List of validation respondents

Item	Respondents	Number	Label	Other Expertise
1	Chief Lands Officer	2	Bureaucrat	Real Estate Appraiser
2	Assistant Chief Lands Officer	1	Bureaucrat	Real Estate Appraiser
3	Retired Chief Lands Officer	1	*Consultant	Real Estate Consultant
4	Retired Chief Technical Officer (Land Records)	1	*Consultant	Consultant in Land Administration
5	Real Estate Consultants	2	Consultants	Quantity Surveying
6	Real Estate Consultants	3	Consultants	Real Estate Appraisers
7	Real Estate Consultant	1	Consultant	LIS/GIS/Surveyor
8	Legal Consultant	1	Consultant	Lawyer
9	Financial Services Consultant	1	Consultant	Data Management.
	TOTAL	13		

* Retired bureaucrat practicing as private consultant.

A total of 20 PSLISs that expressed interest in the outcome of the study were listed for validation of the research findings. These are consultants who had expressed interest in the research findings during the primary data collection. However, four could not be contacted on mobile phone in advance to seek their consent. Twelve out of the remaining 16 were sampled systematically and questionnaires sent to them. Eight returned the questionnaires duly completed with feedbacks. Five bureaucrats sampled all responded to the questionnaire. Thus, a total of seventeen respondents were contacted for the validation of the research findings and evaluation of the framework developed based on the findings.

In total, the thirteen participants who responded to the questionnaire (Table 10.1) out of the seventeen represent 76% feedback received. This number appears to represent a pragmatic number compared to what pertains in other built environment studies. For example, in the UK, Manu (2013) used 13 respondents to validate a tool kit development research.

10.5 VALIDATION OF FINDINGS

A close-ended Likert-type scale questionnaire with a space provided for additional comments to the responses was used in eliciting responses to validate the research findings. For purposes of anonymity, the bureaucrats who responded are in no order labelled as Bureaucrat EK1, EK2, and EK3. Similarly, the retired bureaucrats and also in no particular order, are also labelled as EKC1 and EKC2. Hence, Table 10.2 presents the responses, which have been tabulated in frequencies.

Table 10.2: Table of respondents' validation of findings

Research Findings	Number of Responses and Percentage of Responses				
	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1. Relevant information required to tackle information asymmetry is all-in-one land information.	0 (0%)	0 (0%)	0 (0%)	7 (54%)	6 (46%)
2. Potential PSLISs possess cost efficient entrepreneurial knowledge relevant for land information harnessing.	0 (0%)	0 (0%)	3 (23%)	4 (31%)	6 (46%)
3. Potential PSLISs possess adaptive entrepreneurial knowledge relevant for land information harnessing.	0 (0%)	0 (0%)	0 (0%)	6 (46%)	7 (54%)
4. Potential PSLISs are likely to use cost efficient and adaptive knowledge in competition in the event of deregulation of land information supply.	0 (0%)	0 (0%)	0 (0%)	8 (62%)	5 (38%)
5. Competition is likely to result in improved awareness, less costly and timely access, innovation and responsive information supply.	0 (0%)	0 (0%)	0 (0%)	4 (31%)	9 (69%)
6. There is an inverse relationship between demand and price for land information and that supply at a lower competitive cost is likely to increase access and use of land information by the public.	0 (0%)	0 (0%)	1 (8%)	6 (46%)	6 (46%)
7. Land information users perceive PSLISs are capable of gathering land data and dissemination but not sure of to process and keep land records.	1 (8%)	1 (8%)	3 (23%)	5 (38%)	3 (23%)
8. LPOs agree to a more effective participation by PSLISs in land information harnessing but not disagree with privatisation of land information service delivery.	0 (0%)	1 (8%)	4 (31%)	5 (38%)	3 (23%)
9. Restructuring of the land sector agencies has brought inertia in land information service delivery.	0	2 (15%)	6 (46%)	4 (31%)	1 (8%)

10.5.1 All-in-one Land Information

In accord with the initial research findings which showed strong degree of agreement that all-in-one land information is relevant information required in UREMs, validation respondents also agree (54%) and strongly agree (46%) as shown in Table 10.2. Altogether, the 13 respondents (representing 100%) confirm the findings that market data, ownership, land use, environmental and public amenities information is the

relevant information required to deal with information asymmetry. The following statements were made in support of the responses.

Table 10.3: Validation feedback on all-in-one land information

RESPONDENTS	QUOTE OF STATEMENTS
Bureaucrat EKC2	<i>In practice these elements represent the key information that support decision making process by persons operating in the market and yet their availability and quality pose challenges in the land market.</i>
Financial Services Consultant	<i>I strongly believe readily available and easy accessibilities of the above information eliminate many land litigation issues some of which has lasted over 50years, payment of compensations and land-guard systems that traumatize our societies constantly.</i>
Bureaucrat EKC1	<i>The key components are necessary parameters to ensure complete information on urban real estate markets. It is expected that the market event component would have provision for the real value of the sale.</i>
Bureaucrat EK1	<i>Other relevant information includes land values, incidence of land litigation, and succession within customary land owning groups</i>
Bureaucrat EK3	<i>The five (5) key components are all-encompassing. However, it would not be out of place if ‘‘value’’ could stand out as distinct from market event.</i>
Quantity Surveying Consultant	<i>In addition, we need to look at the soft skill needs and relationships in the land market.</i>

The statements above suggest that the research findings that all-in-one land information, which is comprehensive land information, is required to bring information symmetry to UREMs. The implication of this validation outcome is that a future land information policy may have to consider all-in-one land information as the kind of information to be harnessed in UREMs. The section that follows looks at one of the ingredients required to enable the relevant information to flow.

10.5.2 PSLISs Possession of Cost Efficient Knowledge

Consistent with land information users perception that PSLISs can deliver cost efficient service (Chapter Eight) and also, empirical relationship established between efficiency

knowledge and competition (Chapter Nine), the respondents generally confirm (by 77% response in affirmation) that PSLISs possess this knowledge for delivering better land information service than the public sector. Key comments are as follows.

Table 10.4: Validation of PSLISs' possession of cost efficient knowledge

RESPONDENTS	QUOTE OF STATEMENTS
Real Estate Consultant	<i>Private Sector thrives on providing efficient services at least cost to clients</i>
Bureaucrat EK2	<i>I agree, because the private sector for profit motives, possess cost efficient skills better than the public sector</i>
Bureaucrat EK1	<i>Many private sector institutions are already computerised whilst the public sector in Ghana is now in the process of computerisation. Public sector operations are in the main not efficient and business-like therefore private sector efficiency is needed to strengthen public sector operations. In terms of pricing public sector prices are generally more affordable in view of the fact that the government does not insist on cost recovery from the public sector</i>
Bureaucrat EK3	<i>The PSLIS is profit-oriented and aims to deliver results. Value for money is of the essence. The continuous existence of the PSLIS is their ability to satisfy their clients. Therefore, it stands out to reason if the research findings prove so.</i>
Quantity Surveying Consultant	<i>But the control, monitoring and evaluation of services of these PSLISs must be considered crucial to the management of the process</i>
Bureaucrat EKC2	<i>This will only hold true if a robust regulatory framework is developed (both legal and institutional) that can sanction and reward competence and also create a competitive atmosphere for private sector players.</i>
Bureaucrat EKC1	<i>I am not sure of this sector in the sense that records keeping in Ghana has a chequered history even in the Public Sector. However, it is hoped that their participation could induce competition and innovation could trigger efficiency to enhance land information delivery</i>

The feedback suggests that some respondents have trust in PSLISs to deliver cost efficient service whilst others see the need for PSLISs to come on board under a well thought through regulatory regime. The explanation and implication of this dichotomy for policy can be inferred from ETK, which suggests that there is an existing knowledge to be discovered. This possibly suggests that until competition is introduced, the

outcome of efficiency knowledge on price in competition in harnessing land information may not be known. Discussion on adaptive knowledge is likely to highlight the difference better.

10.5.3 PSLISs' Possession of Adaptive Knowledge

The finding that adaptive knowledge has a significant relationship with competition was also confirmed by respondents. However, unlike efficiency knowledge, this finding was confirmed by 100% agreement among respondents. Out of the 13 respondents, seven (representing 54%) strongly agree that adaptive knowledge makes the difference between the public and privates sectors and six (representing 42%), agree with the findings. Unlike cost efficient knowledge, the respondents all at least agree. It also suggests that adaptive knowledge is the existing knowledge whilst efficiency knowledge is likely to be the knowledge that is aggregated most by the price system. Some comments are as follows.

Table 10.5: Validation of PSLISs' possession of adaptive knowledge

RESPONDENTS	QUOTE OF STATEMENTS
Real Estate Consultant	<i>ADAPTIVE, yes, otherwise one will not have any business being in business</i>
Bureaucrat EK2	<i>I strongly agree because the private sector is more versatile and much more result- oriented</i>
Real Estate Consultant	<i>Public Sector generally slow and reluctant in responding to changes</i>
Bureaucrat EK1	<i>Private sector land information suppliers are certainly more adaptive and better resourced and motivated than the public sector. They will continue to do that if they can see the possibility of a good return on their investment in the gathering, processing and storing land information. ....Most likely, yes. But entrepreneurial knowledge should be backed with skills in the land market as well as the urban real estate market</i>
Bureaucrat EK3	<i>The ability to spot and exploit opportunities is key in every entrepreneurial endeavour. The legal context within which the PSLIS operate is not as strict as that of the PSLAA which is state controlled. Due to the level of autonomy and diversity enjoyed by the PSLIS, they can adapt easily to market changes.</i>

The comments in Table 10.5 on the research findings converge with the assertion in ETK that adaptation is key in the market process. The feedback confirms the finding of the research that adaptive knowledge is a key ingredient likely to be used in competition in land information harnessing following deregulation of land information harnessing. The positive response from all respondents confirm that adaptive knowledge is more of an existing knowledge that they are sure of than efficiency knowledge over which responses were divided.

10.5.4 Utilisation of Efficiency and Adaptive Knowledge

All 13 respondents (representing 100%) confirm deregulation is likely to enable PSLISs utilise efficiency and adaptive knowledge for service delivery. Eight out of the twelve respondents (representing 62%) agree whilst five respondents (representing 38%) strongly agree with the findings. Table 10.6 shows quotes of four comments made on the findings.

Table 10.6: Validation of use of efficiency and adaptive knowledge in competition

RESPONDENTS	QUOTE OF STATEMENTS
Quantity Surveying Consultant	<i>It is generally felt that deregulation of land information supply is key and competition can just ensure a kick start. Any sustainability requires cost information flow, quality delivery service and time consciousness</i>
Bureaucrat EKC1	<i>This is possible because the private sector would focus only on data on analysis and sale and would not be saddled with extraneous issues that bedevil public sector institutions</i>
Bureaucrat EK3	<i>The PSLIS possess a hands-on value drive and can demonstrate their bias for action. So they often take decisions that work but not necessarily the best. This ability to outwit the rule-based bureaucratic competitors makes the PSLIS more attractive.</i>
Real Estate Consultant	<i>Private Sector thrives on providing services efficiently at least cost</i>

The 100% response and feedback comments from the respondents confirm the finding that adaptive and efficiency knowledge are key knowledge utilised in competition. The implication of the validation suggests that there is a need for deregulation of land

information harnessing in order to tackle the problem of information asymmetry in UREMs in Ghana. The need for deregulation from the perspective of land information users follows in the next validation discussion.

10.5.5 Improved Service Delivery under Competition

All 13 respondents (representing 100%) agree with the finding that competition is likely to result in improved awareness, less costly and timely access to information, innovation, prompt and responsive land information supply. Nine out of the 13 respondents (representing 69%) strongly agree with the finding whilst four respondents (representing 31%), agree with the finding. Seven comments were made on this finding and six are presented in Table 10.7.

Table 10.7: Validation of improved service delivery under competition

RESPONDENTS	QUOTE OF STATEMENTS
Financial Services Consultant	<i>PSLIS will constantly be researching into innovative ways to stay ahead of competition and attract customers to their site. A living example is the Insurance Industry in Ghana, where the private insurance firms captured majority market share from the state owned insurance company. The private companies investigate issues swiftly, decide quickly and pay insurance claims very promptly and quickly. The private firms keep alerting their clients of changes in regulation and when their insurance expires etc. This is what I see the PSLIS will be ending up to meet land buyer demands, since ultimately, the buyer will pay any moderate price for an everlasting peace with the plot of land purchased.</i>
Bureaucrat EK2	<i>I agree because competition will bring the best out of the various players in their quest to outpace the other</i>
Bureaucrat EK1	<i>Competition is key efficiency in the public sector and should therefore be encouraged with proper guidelines to ensure fair play by all the players in the sector</i>
Bureaucrat EKC1	<i>That is true of private sector players, but the problem of ethical behaviour that control public sector must not be overlooked</i>
Bureaucrat EK3	<i>Competitiveness is a reality check on PSLIS rendering same service. so every PSLIS would use less to achieve results and introduce new ideas to keep them in business.</i>
Quantity Surveying Consultant	<i>Yes but the competition must be seen to be fair, transparent and equitable with integrity</i>

The feedback confirms the findings that competition in land information supply is likely to promote healthy flow of land information to enable information symmetry to prevail. The respondents, however, emphasised on the need for healthy economic competition to prevail. The implication of the validation outcome is that from land information users perspective, deregulation is likely to promote better land information service delivery. Willingness of information users to pay for competitive information is presented next.

10.5.6 Inverse Relationship between Demand and Price of Information

Validation of the finding that lower cost of accessing land information is likely to induce more demand for land information equally received majority (92%) confirmation by the respondents. Six respondents (46%) agree and six (46%) also strongly agree that there is an inverse relationship between demand and price of land information. One respondent (representing 8%) neither agree nor disagree to the findings. Six comments were received and five are reported as follows.

Table 10.8: Validation of relationship between price of information and demand

RESPONDENTS	QUOTE OF STATEMENTS
Bureaucrat EK1	<i>Reduction in cost/price will certainly encourage more people to use land information and the frequency of use will increase</i>
Bureaucrat EKC1	<i>This is very true</i>
Bureaucrat EK3	<i>All things being equal; an increase in the quantum of request (Demand) for land information at a given price (constant) is more rational than a decrease in the volume of request at a higher price. This is a gain in revenue generation. However, supply of land information at a reduced cost without allowance to stated timeliness is a fallacy.</i>
Real Estate Consultant	<i>Public definitely will access services if cost is reduced and made more efficient</i>
Financial Services Consultant	<i>Timely, accurate and authentic document process at an affordable cost will definitely result in increased access. Example is the private insurance firms that has perfected and automated most of their processes providing their services at a reduced cost and therefore attracting clients in numbers. The non-innovative firms rather resort to populism and branding the innovative firms as under-cutting to win clients – the song on the mouth of the state owned insurance firm.</i>

The feedback received confirms that there is an inverse relationship between willingness to pay and demand for improved land information is valid. What this possibly implies is that competition is likely to enable access to information at low competitive prices and this is what is expected of efficiency knowledge as undiscovered knowledge in ETK. The likely policy implication of the findings is that pricing is an issue that competition may take care of and regulation need to focus on compliance of rules and standards set. Next to be presented is the kind of service or role the private sector can compete in.

10.5.7 PSLISs' Capable of Gathering and Disseminating of Land Information

The findings that land information users perceive the private sector is capable of gathering land data and disseminating land information but, not sure of the PSLISs' processing and storing received mixed responses. The responses range from strongly disagree to strongly agree, albeit a majority agree as shown in Table 10.2. Three respondents (representing 23%) strongly agree, five (representing 38%) agree whilst three (23%) neither agree nor disagree. Furthermore, a respondent each disagree and strongly disagree (both representing 16%) of the respondents. Altogether, nine respondents provided comments, which highlight the different degrees of agreement over the finding. These comments are stated in Table 10.9.

Table 10.9: Validation of PSLISs' capability to harness land information

RESPONDENTS	QUOTE OF STATEMENTS
Legal Consultant	<i>While I do not doubt their capacity to keep land records better than public sector land agencies, there must be a central point for the convergence of all the information gathered and processed and shared, and this is where the Lands Commission may come in.</i>
Bureaucrat EKC1	<i>The capacity to process and maintain national land records cannot be left in the hands of private sector due to its strategic importance and the cost-reliability ratio to the public sector strength.</i>
Bureaucrat EKC2	<i>This is so because in practice some sectors have shown competence by private sector players while this is not so with other sectors.</i>
Bureaucrat EK2	<i>The private sector indeed possess the know-how and motivation to</i>

	<i>gather land information but lack the experience in processing and keeping land records which has been the preserve of the public sector for a very long time.</i>
Bureaucrat EK3	<i>The issue of confidentiality and data security concerns are questionable if land records are left under the control of PSLIS. There is the need for some state controls in the management of level of records.</i>
Real Estate Consultant	<i>Private sector should be capable of good recording keeping with aid of modern technology, ICT etc.</i>
Quantity Surveying Consultant	<i>It is perceived and rightly so that the private sector must stay with data and information whilst process and land record keeping remain with the public sector; a sort of Public Private Partnership situation which is permissible now in Ghana with Guidelines and an Act in the offing.</i>
Financial Services Consultant	<i>If land information supply is de-regulated, and a disciplined regulatory process is in place, the PSLIS will rise to the perfection of processing and keeping land records better than the public sector land agencies. This process is currently the situation with the newly enacted PENSIONS schemes in Ghana. I believe, PSLIS will keep a better records of lands and properties to meet regulatory requirement, and in so doing as well, provide a means of government raising a lot of property taxes, and help in better planned community development</i>
Bureaucrat EK1	<i>PSLIS are capable of processing and storing land information. The real issue for the users of the information is whether the data are accurately captured and have not in any way been compromised and whether the data are complete. A key issue is how to ensure that the data are authenticated. The public sector has a lot of data but is not necessarily the best institution for the processing of land data. Several of the data held by them have been lost because of mishandling. However profit motivation in the private sector, if not controlled may adversely affect the performance of the private sector.</i>

The feedback received and rating responses confirm the research findings that land information users perceive potential PSLISs to be capable of gathering and disseminating information better than the public sector agencies but not processing and storage. The policy implication from the finding is that a win-win situation may be desirable in the sense that competition in land information harnessing may have to be done in stages of gathering, processing, storage, and dissemination. Validation of findings on perception of LPOs in succeeding section highlights further on this implication.

10.5.8 LPSs Not in Favour of Privatisation

Table 10.2 shows that three of the respondents (23%) strongly agree and also five respondents (38%) agree with the finding that LOPs agree to PSLISs' effective participation in land information harnessing but not to complete privatisation of the service. Four respondents (31%) neither agree nor disagree with the findings whilst one respondent (8%) disagree with the finding.

Eight respondents (representing 61%) confirm that the research finding that land information harnessing should not be completely privatised is valid. Also, in addition to land information users' perception about PSLISs' capability, the feedback comments received provide further impetus for the kind of LIS model that needs to be considered in terms of policy. This is because the results suggest that the two extreme LIS models that can be recalled (Chapter Three) namely, the centralist and non-interventionist LIS models appear not to be the model to adopt in the context of Ghana based on the research findings. Eight respondents made comments to back their stance. Seven of the comments are presented in Table 10.10.

Table 10.10: Validation of LPOs' perception about privatisation information supply

RESPONDENT	QUOTE OF STATEMENTS
Real Estate Consultant	<i>Privatisation could prove more efficient and cost effective</i>
Quantity Surveying Consultant	<i>Participation yes but collaboration and consultations are needed for the enhancement of the process. I totally agree to privatization of land information service delivery</i>
Bureaucrat EKC2	LPOs are not sure of privatisation: <i>This is because of the fear of the unknown</i>
Financial Services Consultant	<i>I believe part of the land information service delivery should be privatized. With a strong regulation of these private PSLIS, a better transparency and accounting is not farfetched. Hitherto SSNIT had been the sole public pension firm. However, introduction of tiers into pensions and some tiers offloaded to private companies, SSNIT now accounts better to pensioners</i>
Bureaucrat EK1	<i>Total privatisation of the land information service delivery</i>

	<i>will create many problems. The public sector agencies generate a significant percentage of land information and they will be reluctant to release them to the full control by the private sectors. Land information from the private sector may suffer credibility problems as to their quality, integrity and reliability. We need therefore to have a strong collaboration between the private and public sectors to create a viable model</i>
Bureaucrat EK2	<i>Privatization will indeed increase the cost of access to land information</i>
Bureaucrat EK3	<i>Privatisation is linked to full-cost recovery as opposed to government intervention in subsidising land related fees and charges. In real terms, most citizens prefer the PSLAA to deliver land information service.</i>

From the foregoing discussions, the Facilitating LIS model, which has an option of low and high degree interventions appear to be the obvious choice (see Section 3.4.3). However, from the research findings and preceding validation results, a bespoke high degree intervention quite similar to the Dutch high degree intervention model is proposed. The difference in the proposed model is that a Division of the PSLAA is created to facilitate and coordinate independent competing PSLISs unlike the Dutch model where these private suppliers are owned by a specialised state agency, the KADATA (Dale and McLaren, 1999). Under the prevailing monopoly regime, a business oriented division, of the existing public sector land administration agency is proposed for reasons that are better articulated in succeeding discussions.

10.5.9 Delays in Information Dissemination under Restructured Regime

Chapter Eight discusses secondary data sourced for demand and supply analysis of land information. Findings from a time series analysis of the data yielded patterns that suggest land information supply under the restructured land administration regime, was characterised with delays more than the pre-merger period. However, the validation responses yielded some mixed responses as follows.

One respondent strongly agree (representing 8%), four agree (31%), six (46%) neither agree nor disagree, and two (15%) disagree. This implies that 39% of the respondents agree to the findings whilst 15% disagree and 46% are neutral. What this pattern of agreement suggests is that it is possible that the public perceives the restructuring is effective even though it is not based on the secondary data analysed. Ten respondents out of the 13 respondents provided written comments, which tend to support this interpretation. Ten of the comments are stated in Table 10.11 as follows.

Table 10.11: Validation of findings on pre and post-merger information supply gaps

RESPONDENTS	QUOTE OF STATEMENTS
Real Estate Consultant	<i>....Red flag must be raised. This must be serious</i>
Financial Services Consultant	<i>The planned elimination of duplication processes, organisational structures and central database compilations have not taken full effect. However, it has started gaining confidence and popularity with the end users another respondent notes</i>
Bureaucrat EKC2	<i>This has not happened in my opinion because of the fear of the ultimate outcome of such a merger and the insecurity it has brought with it. Consequently people are still protecting their domains</i>
Bureaucrat EKC1	<i>The public is yet to reap the benefits of the merger since most of the goodies promised them has not materialised. In fact the major hurdle is the retuning of the minds of the personnel</i>
Bureaucrat EK1	<i>There are progress in certain areas and stagnation in other areas. This could partly be attributed to teething problems. There are financial challenges and the structure of the Commission is still going through constant modification. The financial challenges before the merger were worse for some the divisions which negatively affected their performance</i>
Bureaucrat EK2	<i>The restructuring has not changed much of the activities and perhaps the structure of the individual agencies and therefore has not brought any inertia. Each agency is rather protecting its territory zealously</i>
Bureaucrat EK3	<i>Synchronisation of land records at a central point is necessary</i>
LIS/GIS and Land Surveying Consultant	<i>Searches are inconclusive; the physical merger has not solved the problem of inefficiency</i>
Quantity Surveying Consultant	<i>And in some cases stalling the process of acquisition. The least stated about Stamp Duty under these circumstances the better. Data gathered must be well packaged for commercialization of that area as that sector goes beyond land issues</i>
Real Estate Consultant	<i>There is need for public sector to structure service delivery</i>

The comments above clearly suggest that the restructuring of public land agencies in Ghana has not yielded the much anticipated efficient and effective land administration service delivery taking land information supply into context. The implication of the finding may be for consideration of having a public sector land agency with staff having the understanding of information as a valuable resource. In connection with this likely policy implication, a framework was proposed for comments from respondents. Table 10.12 shows the comments received.

Table 10.12: Comments on feasibility of proposed framework

RESPONDENTS	QUOTE OF STATEMENTS
Real Estate Consultants	<i>I think you've done some good work. This must be feasible. But the problem will come to political will and INERTIA on the part of technocrats</i>
Quantity Surveying Consultant	<i>The model proposed appears to be a cost efficient way of land information management and dissemination. I believe the proposed model is feasible with adequate public education, stakeholders forum and political will to ensure its implementation</i>
Real Estate Consultant	<i>I think this model is feasible and if well applied will enhance access to accurate data base</i>
Legal Consultant	<i>I think the model is feasible</i>
Real Estate Consultant	<i>Model appears feasible. There would have to be much public awareness for implementation. Attitudes of public sector would need changing</i>
Bureaucrat EK1	<i>The model will be feasible if LIMD will be a public sector agency empowered and regulated by law. Without statutory powers it will be difficult to implement the laudable ideas of the model. Other important land sector agencies like Office of Administrator of Stools Lands, Town & Country Planning Department, Minerals and Forestry Commissions can come on board. In the long run information, held by the District Assemblies, utility companies (public and private) and the EPA should be brought on board.</i>
Bureaucrat EK2	<i>The blend is feasible in the sense that the public sector has enjoyed monopoly in land information data collection for a very long time and has the experience to do so but lacks the ability to manage and disseminate it efficiently. The two working together will therefore provide the best solution in addressing current challenge.</i>
Bureaucrat EKC1	<i>In my opinion the model as proposed is feasible. However, to clear the doubt of the stakeholder, I am of firm believe that District Assemblies could be empowered to collaborate</i>

	<i>the PSLAAs to provide the vehicle position of PSLISs.</i>
Financial Services Consultant	<i>In Ghana where 80% of our land is owned individuals (families, stool, clans etc) and the remaining 20% owned by the state, I believe the model will be feasible and sustainable. I believe the role of PSLISs will boost confidence is land title delivery services. This will provide widespread and affordable services for all land owners to acquire titles and also enable them to easily update any future transactions on the land. Once the PSLAAs and LIMD discharge their duties responsible to prevent adulterations of the title documents and information under oath, the PSLISs will be the best and most effective way of providing the relevant land service delivery in Ghana</i>
LIS/GIS and Surveying Consultant	<i>This is feasible, but need to strengthen the Public agency and weed out corruption, lax and attitude to work</i>
Bureaucrat EK3	<i>It is a feasible and workable model in the context of Ghana if there would be Political Will by successive governments to appreciate the need to improve land information service delivery</i>
Quantity Surveying Consultant	<i>The Model being proposed seems feasible under the circumstances and context in Ghana but needs the re-orientation of land sector personnel and a further restructuring of "restructured" Lands Commission</i>

The comments received are well articulated. Hence, all considered, a theory driven and empirical research findings, which are validated by land administration experts and potential PSLIS with relevant policy implications, a framework for competition in land information management was derived. The framework, which may be operationalised at four levels, is shown in Figure 10.2. The framework is followed by a brief narration of the context within which the framework may be operationalised.

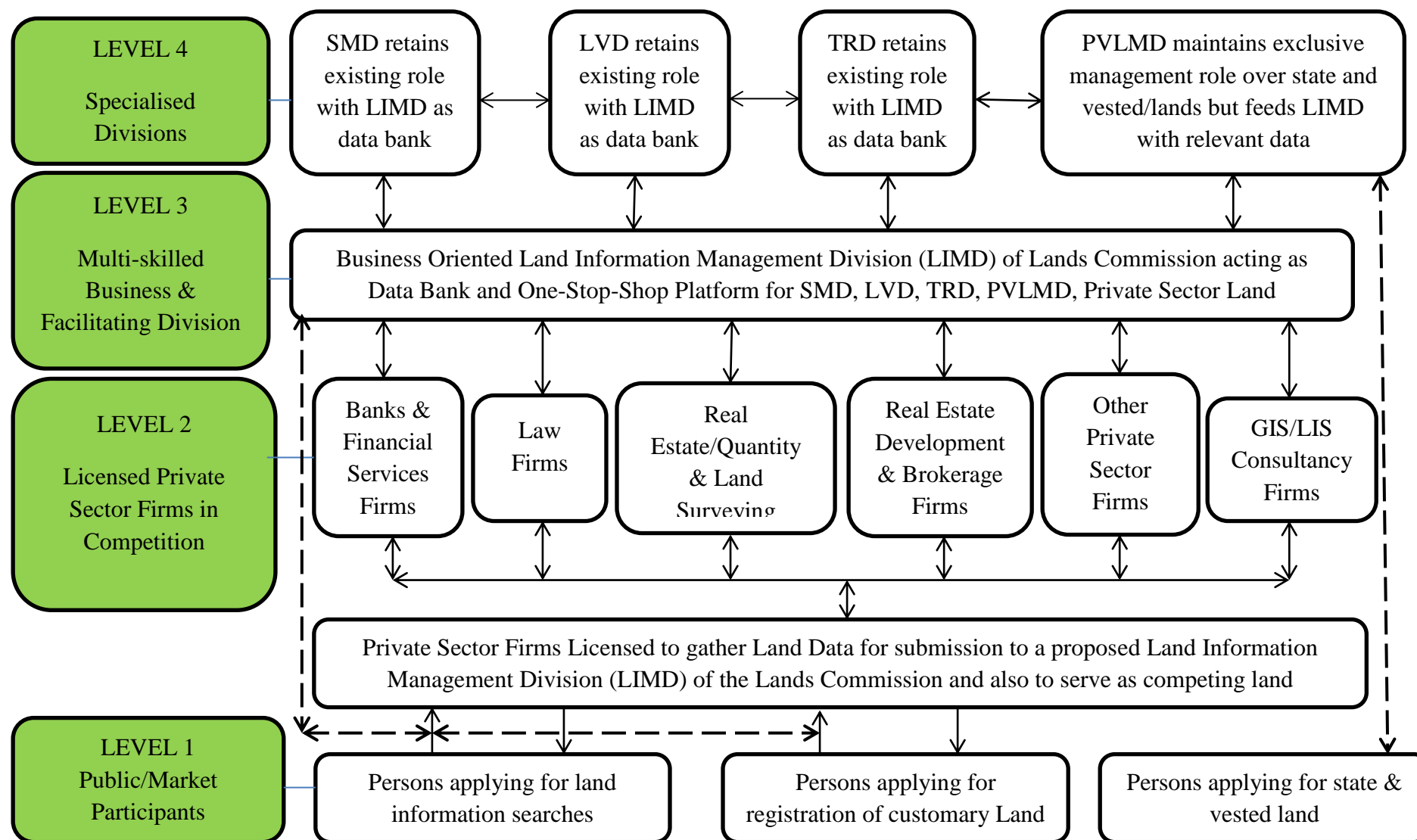


Figure 10.2: Framework for competition in harnessing land information in UREMs

10.5.10 Development of All-in-One Land Information Harnessing Framework

A generic land information policy hierarchy is already established in Chapter Three (Section 3.8) based on insights derived from Steudler and Wallace (2002). Building on these insights with theoretical and empirical backing, the framework developed is likely to be operationalised with relevant provision in a land policy that provides policy direction and action of land information policy hierarchy. These are land information policy, land information practices, and audit performance of the land information system.

With land information policy, first an enterprise land information management division (LIMD) needs to be created to facilitate PSLISs operations and coordinate data from existing land divisions or agencies. Following this, competition in land data gathering and dissemination can be used to kick start the process and with time competition in information processing introduced based on successful outcomes. The relevant information to be gathered needs to be all-in-one land information. This needs to be guided by the minimum standard required, guidelines on PSLISs access to central data at the LIMD. To serve as a guide, a policy on privacy of landed property owners, how a search is to be conducted and manner landed property information is to be extracted and disseminated about registered landed property owners is required. Regarding pricing, what needs to be checked is collusion and not necessarily prices being fixed. Determination of prices by forces of demand and supply in a healthy competitive environment is preferably the best option, all things being equal.

In terms of land information management, policy needs to guide the kind of information to register that will commensurate all-in-one land information supply. LIMD needs to take custodianship of land information as a central data bank. Registration centres of the LIMD can be decentralised for a start until PSLISs can be licensed to do so on behalf of

LIMD. The role of the PSLISs needs to be clearly spelt out and reward and sanction system set up. LIMD needs also to serve as a consumer complaint unit.

Finally, routine monitoring and evaluation of the efficiency of the framework needs to be carried out to verify speed of service delivery, incidence of land disputes and conflicts, and transaction cost in the real estate sector. The others could be annual price fluctuation. Thus, it is possible that if land information is considered as a valuable corporate resource and with political will, effective regulatory framework and business minded public sector bureaucrats as well as entrepreneurial minded PSLISs, the framework is likely to be useful in tackling information asymmetry in UREMs.

10.6 SUMMARY OF CHAPTER

This chapter has presented a summary of the research findings and a framework developed for land information harnessing based on the findings. The chapter has also provided a validation of the findings of the research in fulfilment of the sixth objective of the research. Furthermore, it has confirmed the feasibility of the framework that was developed, which can be used to guide policy for deregulation of land information supply for competition in all-in-one land information harnessing among PSLISs in UREMs. The chapter provides grounds for possible generalization of research findings and the reliability of the framework.

CHAPTER ELEVEN

CONCLUSIONS AND RECOMMENDATIONS

11.0 INTRODUCTION

This is the final chapter of the study and it has four key roles to play in the thesis. First, the chapter presents conclusions drawn from the research findings. Second, it provides the policy implications of the research findings and third, contribution of the study to real estate theory and practice. Finally, the chapter outlines recommendations for policy consideration and future areas of study.

11.1 CONCLUSIONS OF THE RESEARCH

11.1.1 Source and Cause of Information Asymmetry in UREMs in Ghana

The source of information asymmetry in UREMs in Ghana is traceable to low registration coverage in the land registry in Ghana. Land registration has been introduced with more focus on guaranteeing certainty of ownership and reducing litigation cost. Hence, the registration system has not been managed well enough as land information gathering tool. Consequently, the problem of information asymmetry has persisted because managers of the land registration system have focused on using the system to tackling the symptoms of information asymmetry, which are uncertainty and high litigation cost in UREMs in Ghana. Thus, the registration system is inefficient and information asymmetry continues to fester in UREMs because of reliance on expert knowledge and not on economic knowledge for land information management.

11.1.2 Information Required to Tackle Information Asymmetry in UREMs

Land information consumers in UREMs in Ghana are self-serving individuals who are variety seeking land information users. These information users seek for all-in-one land

information particular market event information consisting of information on available properties and legal interests in the property and also, information on land tenure including confirmation of proprietary owner, litigation status, government interest and principal witnesses to a customary grant. Thus, existing information consumers want to know market conditions and to access the market at least cost and also with certainty in order to transact in UREMs. Tackling information asymmetry, therefore, from a demand perspective, requires the availability of this information at the least cost.

11.1.3 Approach to Tackle Information Asymmetry in UREMs

The real estate sector in Ghana has potential PSLISs with adaptive and cost efficient economic knowledge capable of managing aspects of the land information system to the benefit of the citizens more than state owned land administration bureaus. The approach required, therefore, to effectively tackle information asymmetry in Ghana is to introduce competition into the land information system management among PSLISs under the supervision and monitoring of a specialised but more business oriented Land Information Management Division within the public sector land administration bureau in Ghana.

11.1.4 Relevance of ETK

The findings of the study suggests that deregulation of the monopoly of PSLAAs over land information harnessing is required in a systematic manner to enable PSLISs utilise their economic knowledge for competition in harnessing of land information. Thus, the findings of the research converge with ETK propounded by Hayek (1945).

11.2 RECOMMENDATIONS FOR POLICY

Prior to proposing recommendations in the study, it is important to indicate that the recommendation adds to existing knowledge and debate over government intervention

in the real estate sector. Antwi (2000) from rent seeking theory perspective recommended that government bureaucracies involved in land administration be removed for private sector participation. Hammond (2006) from transaction cost theory perspective offered an opposing view and critiqued that Antwi's (2000) position was based on theoretical assumption that private sector firms are more efficient than public sector agencies.

The current study from ETK perspective contributes to policy recommendation by providing empirical evidence to oppose Hammond (2006) that Antwi's (2000) position is not merely predicated on a theoretical assumption but based on empirical evidence. Hence, the current study maintains that private sector firms in dynamic competition in price system operated markets are more predisposed to be efficient than public sector agencies operating under entrenched monopoly market systems because of the utilisation of adaptive knowledge and efficiency knowledge in the supply of goods and services. However, unlike Antwi (2000), this study recommends for an alternative bespoke arrangement for government land sector agencies' presence in the market. In tandem with the above and based on conclusions drawn from the findings of the study, the following recommendations are proposed for further policy considerations and studies.

11.3.1 The Main Policy Proposition

In view of the weight of both theoretical propositions and empirical evidence gathered from the study, it is proposed that the entrenched monopoly power of the public sector land agency responsible for land administration should be deregulated for competition in supply of land administration services by the private sector. Taking this step is most likely to ensure that existing huge information gap in the real sector will be systematically closed to enable healthy flow and wide access to reliable land

information by the public. However, for this to materialise, the NLP needs to be reformulated to take into consideration contemporary issues on land information policy, management and administration. Regarding the number of recent research findings and lessons learnt from the implementation of the Land Administration Project, reformulation of the policy needs not be a daunting task. However, because of previous experiences in formulating the NLP, the following specific recommendations are proposed.

First, flowing from the NLP, a Land Information Policy needs to be formulated to run concurrently with the NLP in order not to repeat the current practice where there is no land information policy and, therefore, the system lacks direction on approach to land information harnessing, management, and operationalization. Second, considering that policy formulation can take time to be thoroughly firmed up both short and long term recommendations are inevitable. As a short term measure, it is recommended that the window of opportunity in the LC Act 2008 (Act 767), which provides for the establishment of any other Division as required, be exploited to establish a Land Information Division (LID).

The LID should be off government budget and be self-financing by taking up the responsibility of monitoring, coordinating and possibly, acquiring and taking custody as well as managing landed property information generated at the existing four Divisions of the LC. In this way, the proposed LID would be considered as an enterprise monopolist which Hayek (1948) argues that it is acceptable in the interim as far as it is doing what the market does best but, as soon as potential competitors emerge to deliver the service being provided, the barrier must be cleared for competition to take effect. The implication here is that, in the long run when the relevant land information policy is

formulated for private sector participation, the Division may become the regulating and policy setting wing of the LC to play a monitoring and supervision role of PSLISs.

11.2.2 Regulation and Monitoring of Private Sector Suppliers

In view of the fact that the study is not proposing total government hands off the real estate market, a proposal for government regulation of the conduct and operations of private sector firms in land information supply is essential in as far as it is within the rule of law, norm and acceptable practices. Government supervision in the banking and aviation sector is an example. Hence, since land and land information are valuable resources and assets, the apprehension that private sector information suppliers can hold the system or the entire nation to ransom can be allayed through government stringent monitoring and supervision of the conduct of private sector information suppliers as well as applying rules and sanctions to unethical behaviours and operations. In this regard, standards and land information privacy issues as well as acts of collusions to revert to monopoly structure among land information suppliers would be checked and monitored.

11.2.3 Policy of No Land Information Pricing Legislation

One critical area that is likely to undermine the competitive process is government attempting to fix market prices of land information for private sector information suppliers. Since such an act may be a disincentive to the competitive process, the pricing of land information as much as practicable must be left to the urban real estate market forces of demand and supply. As established in Chapter Eight, the downward sloping demand curve for land information provides an indication that what the market requires is access to land information at a lower cost. Coincidentally, Chapter Ten also established that potential suppliers possess adaptive and efficiency knowledge, which are required to help deliver what the market requires at a lower cost. Thus, it is most

likely that the forces of demand and supply can determine prices for the information that will enable wide access and use to the information to be supplied.

11.2.4 Policy on Standards and Privacy Issues

The kind of information that needs to be harnessed should be standardised as all-in-one land information, which includes information on market data, ownership, land use, physical attributes of landed properties and finally social amenities. Such standardisation is required to enable access to a wide range of information that can help bring about information symmetry among market participants and dealers as well as informed choice and decision making by self-serving individuals. Thus, it is recommended that an improved land information supply regime should consider delivering land information service beyond just information on land ownership but broadly on market comparables, land tenure, land use, environmental data, and public amenities information.

Privacy and security issues over management of the land information set mentioned above should be critically considered since within the context of Ghana, landed property information disclosures have been used as a political weapon against opposing politicians. Thus, key policy issues on land information management such as who gathers and accesses the information and for what purpose are among the issues that must be addressed. As practiced in the banking and finance sector, it is envisaged that privacy, safety and security issues need to be taken on board to standards required in the management of landed property information. It is further anticipated that, with the passage of Right to Information Bill by the Parliament of Ghana followed Presidential assent for the Bill to become enforceable, it should be possible for private land information suppliers to know the threshold of their disclosures and limit of disclosures. Thus, it is recommended that any future licencing of private land information suppliers

should as much as possible be depoliticised in order to ensure healthy competition and successful private sector participation in the land administration.

11.2.5 Policy on Incorporating Crime and Litigation into LIS

The study recommends for consideration, and integration of landed property crime related cases and data such as at the Property Fraud Unit of Police CID Headquarters and pending land disputes at the Specialised Land Court into future LIS. In this way, the uncertainty in landed property transactions is likely to be reduced. Thus, it is envisaged that this is likely to signal real estate market participants about areas and prospective landed property owners that needs to be avoided in order to curb the incidence of uncertainty and high litigation costs in the UREMs.

11.3 RECOMMENDATIONS FOR FURTHER STUDIES

In view of the gaps identified during the review of relevant literature and from the findings as well as policy recommendations of the study, the following recommendations are made for further studies:

- Taking cognisance of the fact that each country has its unique peculiarities among others, it is recommended that the study should be replicated in UREMs in other SSA countries in order to enable a holistic picture and stronger external validity of the study to be established. This is notwithstanding that steps were taken to ensure events and experiences in other SSA countries were taken on board during the research.
- A cost-benefit analysis is recommended for deregulation of the monopoly power of the public sector land agencies for competition by private sector individuals in land information harnessing in UREMs. In this regard, a comparison can be made with respect to state-owned land agencies being regulators and policy

implementing arm of government rather than being monopolist suppliers of land administration services.

- A cost-benefit analysis study for setting up a Land Information Division of the LC with financial autonomy is also recommended as an immediate stop gap measure to reduce the incidence of information asymmetry. This could serve as a pilot study towards a complete deregulation of monopoly power over land administration wielded by the public sector land agencies.
- A study into good governance and trust building for private sector participation in land information harnessing in UREMs in Ghana is recommended.

11.4 CONTRIBUTION TO KNOWLEDGE

The study makes theoretical contribution to knowledge by verifying the relationship between competition and economic knowledge possessed by PSLISs in the context of UREMs. Contribution to the existing strand of knowledge in Ghana and SSA is presented as follows.

- The study builds on the work of Antwi (2000) by exploring ETK by Hayek (1945) as a different theoretical lens to provide empirical evidence that competition can be introduced for the utilisation of economic knowledge possessed by entrepreneurs and not only to tackle rent seeking by bureaucrats.
- The study also builds on the work of Abdulai (2007), which makes policy recommendation that land registration should be promoted based on the right purpose for which it serves such as landownership data base that is reliable. Furthermore, Hammond (2008) reports that the land registry in Accra, is yielding insignificant result contrary to expectations. Hence, the present study suggests an alternative framework through which the land registries as

repositories of land information may become viable and deliver quality land information to the public.

- Three strands of body of studies exist on UREMs particularly, on land markets in Ghana and SSA in general. Out of the three, two are described as having substantial body of studies whilst the third one is referred to as a small body of research (Anim-Odame *et al.*, 2010). This present study builds on the strand of body of research described as a small body of research that differentiates from the two main bodies as follows. Works in this area of knowledge relate to the technical requirements for laying the foundations for efficient real state data recording by Karikari (2003) on GIS and Karikari *et al.* (2003). Some relevant works in relation to land information management studied from the perspective of surveying, mapping and remote sensing studied from international donors perspective and development of LIS were found in literature (Falloux, 1989; Williamson, 1991; Augustinus, 2003; Forkuo and Asiedu, 2009a).
- The present research builds on the preceding third strand of research and body of knowledge with focus on competition as a method of harnessing land information for broad based public access and use that is likely to help tackle the challenge of information asymmetry in UREMs.

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APPENDICES

APPENDIX 1A



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Local Address

*Lands Commission
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Ghana*

QUESTIONNAIRE ON SUPPLY OF ALL-IN-ONE LAND INFORMATION IN GHANA

Dear Sir/Madam,

This survey is part of a doctoral research which is investigating into the possibility of bringing on board private sector businesspersons and entrepreneurs with public sector land registration agencies to supply multipurpose (i.e. a comprehensive) land information as information set useful for decision making in relation to urban lands and properties in Ghana. In line with the goal of the study, this questionnaire, which is in four sections, is designed to elicit your valued opinion and responses.

Section A of the questionnaire requests for basic and general data about respondent's organisation and the respondent. Sections B, C, D, and E each seeks for candid responses to statements on the degree to which a respondent requires (i) components of multipurpose land information; (ii) perception about private sector involvement as land information suppliers; and (iii) expression of willingness to pay for private sector service delivery. Most of the responses are in Likert scale response formats.

The questionnaire will take approximately **15 minutes** to complete. Please answer all questions to the best of your ability. There are no "correct" or "incorrect" answers as most of the answers are subjective and based on individual experiences and perceptions. Please, kindly note that in line with good research ethics, you are assured that the information obtained from this research will be kept strictly CONFIDENTIAL and used solely for purposes of research purposes. Also, as a respondent, you have the right to withdraw from participating or decline to answer any question you deem sensitive.

If you require any further information or clarification, I will be happy to answer your questions via my contact details provided below.

Thank you very much for your time and response.

Stanislaus Adiaba
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APPENDIX 1B



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QUESTIONNAIRE ON SUPPLY OF ALL-IN-ONE LAND INFORMATION IN GHANA

Dear Madam/Sir,

This survey is part of a doctoral research which is investigating into the possibility of bringing on board private sector businesspersons, entrepreneurs and organisations with public sector land registration agencies in Ghana to supply *all-in-one land information* consisting of information on: (i) transactions and trend of market events at particular locations); (ii) registered land; (iii) land use and development control; (iv) environmental condition; and (v) social amenities in relation to specific lands and properties. This comprehensive information is useful information for decision making by information users in relation to urban land and properties when it is efficiently and effectively supplied and accessed by the public.

In line with the goal of the study, this questionnaire, which is in seven sections, is designed to elicit your valued opinion and responses concerning practical knowledge you possess that you can use if recognised as information supplier to supply all-in-one land information. This will include compiling data on land and property, registering, keeping, and providing comprehensive land and property information services. Most of the responses in the questionnaire are in Likert scale response formats and requires ticking options applicable based on individual experiences and perceptions.

The questionnaire will take approximately **25 minutes** to complete. Please, kindly note that in line with good research ethics, information obtained from this questionnaire will be kept strictly **CONFIDENTIAL** and used solely for research purposes. Also, as a respondent, you have the right to withdraw from participating or decline to answer any question you deem sensitive. If you require any further information or clarification, I will be happy to answer your questions via my contact details provided below.

Thank you very much for your time and response.

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APPENDIX 2

Questionnaire for Land Information Users (LIUs)

SECTION A: Respondent's background data

Questionnaire for Clients: No. IU_____

This section focuses on basic and general data about respondents for the purposes of classification of respondents and generating confidence in the credibility of the data gathered.

QA1. Please tick [✓] to indicate your gender.	<input type="checkbox"/> Male	<input type="checkbox"/> Female
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QA2. Which of the age ranges provided best represents your age group? Please tick[✓]	18-27years <input type="checkbox"/>	28-37years <input type="checkbox"/>	38-47years <input type="checkbox"/>
	48-57years <input type="checkbox"/>	58-67years <input type="checkbox"/>	Above 67years <input type="checkbox"/>

QA3. Which of the following educational levels best describes your highest education obtained? Please tick[✓]			
None <input type="checkbox"/>	Primary <input type="checkbox"/>	Middle/ Junior Secondary <input type="checkbox"/>	Technical/ Senior Secondary <input type="checkbox"/>
Post Senior Secondary <input type="checkbox"/>	Polytechnic <input type="checkbox"/>	University <input type="checkbox"/>	Other. Please specify_____

QA4. Please indicate by ticking [✓] your employment status.	Employed <input type="checkbox"/>	Unemployed <input type="checkbox"/>
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QA6. Which of the following income bracket below best describes your gross monthly income? Please tick [✓]			
Below GhC 200 <input type="checkbox"/>	GhC 200 to GhC600 <input type="checkbox"/>	GhC 601 to GhC1,000 <input type="checkbox"/>	GhC1,101 to GhC 1,500 <input type="checkbox"/>
GhC 1,501 to GhC2,000 <input type="checkbox"/>	GhC 2,001 to GhC3,000 <input type="checkbox"/>	Above GhC3,000 <input type="checkbox"/>	Other, please specify_____

Section B: Demand for all-in-one land information as useful information set

This section of the questionnaire seeks to elicit your **candid** rating responses on the extent to which *all-in-one land information as a set of information made up of information on:* (i) specific opportunities, transactions and trend of events in relation to land and property; (ii) registered land; (iii) land use and development control; (iv) environmental condition; and (v) social amenities **is or is not** required as useful information for decision making in relation to land and property.

Using rating scale of **1**= Strongly Disagree, **3**=Disagree, **5**=Neither Agree nor Disagree, **7**=Agree, and **9**=Strongly Agree:

As a **land information user**, (i.e. a person who uses, has used, or is about to use official land information search report for decision making), please tick [✓] to indicate the degree (i.e. extent) to which you **agree or disagree** with statements under QB1 to QB5 as part of **all-in-one land information** (i.e. comprehensive information about land and property).

QB1. A land information user <i>requires</i> market information (i.e. information on opportunities, specific transactions and trend of events in different areas and locations) <u>on the following</u> :	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
1. Type of land or property (i.e. residential, commercial, industrial) available for sale or renting at a preferred area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Type of interest in land or property is available for sale (i.e. freehold, lease, sub-lease, assignment) or renting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Prices of lands/properties and rents for properties available in a preferred area compared to price/rents in other areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Land/plot size and size of specific properties available for sale, leasing, assignment or renting in a preferred area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Property rate of specific building at a preferred area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Social amenities in an area (e.g. schools, hospitals, banks).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QB2. A land information user <i>requires</i> land ownership and registration information <u>on the following</u> :	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
1. Traditional area and if land or property is located within a <u>stool</u> or <u>family</u> land area for purposes of knowing interest to be acquired and also abiding by customary rules (e.g. ban on drumming and noise making during festive seasons).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Legal ownership (e.g. who owns the land or property in whole or in part and can grant title, sell or rent it out).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Principal family members or stool elders to confirm or witness customary land transactions in a particular area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. If land or property is free from litigation or not (e.g. litigation history, mortgage history, third party interest).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Government interest in a particular land or property.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QB3. A land information user <i>requires</i> land use and development control information <u>on the following</u> :	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
1. Class of area land or property is situated (e.g. first, second, third class residential area; light or heavy industrial area).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Uses and restrictions on land or property (e.g. residential, commercial, industrial, or objectionable uses) in an area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Type of property and heights permissible on a plot in a preferred area (e.g. minimum or maximum of 2, 3, or 4 storeys, low, medium and high density buildings).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Building approval, development permits and structural soundness for properties available for occupation and use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QB4. A land information user <i>requires</i> environmental condition information <u>on the following</u> :	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
1. Protected (i.e. restricted) environmental areas and sites (e.g. wetlands, river catchment areas, forests, green belts, parks.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Environmental history of land and property in a preferred location (e.g. original state of a preferred land and property, floodable and marshy but reclaimed, landfill site).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Potential environmental threats to land or property in a preferred location (e.g. flood prone, waterways).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Age of property, weather and fire hazards, rot, decay.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Earthquake zones and areas prone to earthquakes/tremors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QB5. A land information user <i>requires</i> public utilities and infrastructural information <u>on the following</u> :	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
1. Type and condition of access road (e.g. primary, secondary roads and laterite or asphalted) to a preferred land/property.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Availability of utilities (e.g. pipe borne water, electricity).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Stretch of land earmarked for road expansion, high tension lines, pylons, underground cables and pipelines.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Rating on demand for all-in-one land information as a set of useful information.	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
QB6. A land information user <i>requires</i> all-in-one land information as a set of useful information for decision making in relation to land and property.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION C: Perception about private sector involvement in all-in-one land information supply

This section seeks your **candid** rating responses to the perception that: (i) private businesspersons, entrepreneurs or organisations involvement as recognised information suppliers to supply (i.e. **compile data on land and property, register, keep, and provide**) all-in-one land information will serve a land information user better than public sector land registration agencies; and (ii) removal of monopoly power of public sector land registration agencies will enable recognised information suppliers to supply all-in-one land information in an efficient and effective manner that a land information user requires.

QC. Please <u>rate the degree to which you agree with the statements</u> about the perception that: Private businesspersons, entrepreneurs, organisations as recognised information suppliers using their entrepreneurial skills and experiences are capable of:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
1. Compiling data on land and property from individual land and property owners to build up all-in-one land records much better than public sector land registration agencies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Processing the data and keeping a trustworthy register consisting of land and property information much better than public sector land registration agencies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Being innovative in providing tailor made information that users require much better than land registration agencies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Educating and creating public awareness on the need for the public to use information services being commercially offered much better than public land registration agencies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Reducing the cost of obtaining information (i.e. cost in terms delays, stress and opportunities one forgoes to get information) much better than land registration agencies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Provide information within time promised to users much better than public sector land registration agencies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Responding promptly to preferences for information much better than public sector land registration agencies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please <u>rate the degree to which you agree with statements about the perception</u> that:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
QC7. Removal of monopoly power of public sector land registration agencies over supply of land information will enable <u>competition</u> among recognised land information suppliers to efficiently supply information <i>a land information user requires</i> .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC8. Removal of monopoly power of public sector land registration agencies over supply of land information will enable a land information user <u>know</u> which all-in-one land information supplier provides a better land information service.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION D: Expression of willingness to pay for multipurpose land information	
As a prospective all-in-one land information user with expectations for efficient and effective service delivery, please tick [✓] only one option in question QD1 to indicate a maximum price you may be willing to pay for an application for a <u>search</u> for all-in-one land information on a piece of land measuring 0.23 of an acre (i.e. 100ft X 100ft or 30m X 30m) from a <i>recognised information supplier</i> .	Willingness to Pay Please tick [✓] ONLY one
Demand all-in-one land information at a maximum price of GHC18.00.	<input type="checkbox"/>
Demand all-in-one land information at a maximum price of GHC36.00.	<input type="checkbox"/>
Demand all-in-one land information at a maximum price of GHC54.00.	<input type="checkbox"/>
Demand all-in-one land information at a maximum price of GHC72.00.	<input type="checkbox"/>
Demand all-in-one land information at a maximum price of GHC90.00.	<input type="checkbox"/>
Demand all-in-one land information at a maximum price of GHC108.00.	<input type="checkbox"/>
Demand all-in-one land information at a maximum price of GHC126.00.	<input type="checkbox"/>
Demand all-in-one land information at a maximum price of GHC144.00.	<input type="checkbox"/>
Demand all-in-one land information at a maximum price of GHC162.00.	<input type="checkbox"/>
Demand all-in-one land information at a maximum price of GHC180.00.	<input type="checkbox"/>
Demand all-in-one land information at a maximum price of GHC198.00.	<input type="checkbox"/>
Demand all-in-one land information at a maximum price of GHC216.00.	<input type="checkbox"/>

Please <u>rate the degree to which you agree or disagree with the perception</u> that the appropriate method of ensuring efficient and effective supply of all-in-one land information:	Rate the degree to which you agree with the statement				
	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
QD2. Government resourcing and orienting public sector land agencies to operate as profit making government agencies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QD3. Public Private Partnership (PPP) between government and private sector organisations and entrepreneurs as shareholders to supply all-in-one land information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QD4. Firms from the private sector providing land information management services for public sector land agencies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QD5. Outsourcing specific land information supply supply services to the private sector.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please state your comments on *prospects* and *challenges* of bringing recognised private information suppliers on board with public sector land registration agencies to supply of all-in-one land information.

END OF THE QUESTIONNAIRE - THANK YOU FOR YOUR TIME AND RESPONSE

APPENDIX 3

Questionnaire for Prospective Land Information Suppliers (PSLISS)

SECTION A: Data on organisation and respondent: Suppliers Questionnaire No. IS_____

This section seeks for basic and general data about respondent's organisation and respondent as a *prospective all-in-one land information supplier* for the purposes of classification and generating confidence in the credibility of the data gathered.

QA1. Please, specify the nature of your organisation's business operation.

QA2. Your position in the firm or organisation

QA3. Which of the following educational levels best describes your highest education obtained? Please tick[✓]

None <input type="checkbox"/>	Primary <input type="checkbox"/>	Middle/ Junior Secondary <input type="checkbox"/>	Technical/ Senior Secondary <input type="checkbox"/>
Post Senior Secondary <input type="checkbox"/>	Polytechnic <input type="checkbox"/>	University <input type="checkbox"/>	Other. Please specify_____

Sections B, C, D, and E of the questionnaire seek to elicit your candid rating responses concerning relevant practical knowledge you possess that you can use as a recognised all-in-one land information supplier. All responses are five point multi-choice responses on a rating scale anchored on a range between 1 and 9. Please tick [✓] your responses as follows:

1= Strongly Disagree, 3 = Disagree, 5 = Neither Agree nor Disagree, 7 = Agree, and 9 = Strongly Agree

Knowledge of a prospective all-in-one land information suppliers

Knowledge under consideration in this questionnaire refers to personal knowledge which is not necessarily related to your formal training in land administration and management but, knowledge of know how, in terms of how to identify and let a viable commercial economic activity happen based on and guided by intuition, entrepreneurial skill and/or experience gained from practice and is useful for cost-effective supply of all-in-one (i.e. comprehensive) land information.

SECTION B: Knowledge of demands of prospective all-in-one land information users

This section seeks to elicit **candid** responses from you by ticking [✓] to indicate the extent to which as a prospective information supplier you agree or disagree with single-item statements under questions QB1, QB2, QB3, QB4, and QB5 that:

- You possess knowledge of demands of existing and prospective land information users; and that
- Removal of monopoly power of public sector land registration agencies over supply of land information **will** enable you to utilise knowledge possessed about demands of land information users to supply all-in-one land information.

QB1. A prospective all-in-one land information supplier possesses knowledge that land information users require market information <u>on the following</u> for decision making:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
7. Type of land or property (i.e. residential, commercial, industrial land or property) available for sale or renting at a preferred location of prospective information users.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Type of interest in land or property that is available for sale (i.e. freehold, lease, sublease, assignment) or renting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Value of lands/properties and rents for properties available in a preferred area compared to price/rents in other areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Land/plot size and size of specific properties available sale, leasing, assignment, or renting in a preferred area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Property rate on specific property at a preferred location.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Social amenities in an area (e.g. schools, hospitals, banks).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QB2. A prospective all-in-one land information supplier possesses knowledge that land information users require land ownership and registration information on the following:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
6. Traditional area and if land or property is located within a <u>stool</u> or <u>family</u> land area for purposes of knowing interest to be acquired and also abiding by customary rules (e.g. ban on drumming and noise making during festive seasons).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Proprietary ownership (i.e. who owns the land or property in whole or in part and can grant title, sell or rent it out).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Principal family members or stool elders to witness a customary land grant or transactions in a particular area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. If land or property is free from litigation or not (e.g. litigation history, mortgage history, or third party interest).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Government interest in the land or property.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QB3. A prospective all-in-one land information supplier possesses knowledge that land information users require land use and development control information on the following:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
5. Class of area land or property is situated (e.g. first, second, third class residential area; light or heavy industrial area).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Uses and restrictions on land or property (e.g. residential, commercial, industrial, or objectionable uses) in an area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Type of property and heights permissible on a plot in a preferred area (e.g. minimum or maximum of 2, 3, or 4 storeys, low, medium and high density buildings).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Building approval, development permits and structural soundness for buildings available for occupation and use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QB4. A prospective all-in-one land information supplier possesses knowledge that land information users require environmental condition information on the following:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
6. Protected environmental sites and areas (e.g. wetlands, river catchment areas, forests, green belts, parks.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Environmental history of land and property at a preferred area (e.g. floodable and marshy but reclaimed, landfill site).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Potential environmental threats to land or property in a preferred location (e.g. flood prone, waterways).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Age of property, weather and fire hazards, rot, decay.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Earthquake zones and areas prone to earth tremors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QB5. A prospective all-in-one land information supplier possesses knowledge that prospective land information users require public utilities and infrastructural information on the following:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
4. Type and condition of access road (e.g. primary, secondary roads and laterite or asphalted) to a preferred land/property.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Availability of utilities (e.g. pipe borne water, electricity).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Stretch of land earmarked for road expansion, high tension lines, pylons, underground cables and pipelines.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In terms of your knowledge of demands of land information users, please rate the degree to which you agree or disagree with the following statements:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
QB6. A prospective all-in-one land information supplier possesses knowledge that land information users require all-in-one land information for decision making.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QB7. Removal of <i>monopoly power</i> of public sector land registration agencies over supply of land information will enable a recognised land information supplier utilise <i>knowledge of demands of land information users</i> to supply land information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION C: Knowledge of responding promptly to demands of the market

This section focuses on eliciting **candid** rating responses from you on the extent to which as a **prospective all-in-one land information supplier** you **agree** or **disagree** with the statement that you possess knowledge in terms of using market networks, how to employ resources and inputs promptly to satisfy the demands of prospective all-in-one information users.

A prospective all-in-one land information supplier possesses knowledge of responding to demands of the market in terms of the following:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
QC1. Knowledge of utilising market networks (e.g. liaising with customary landowners, knowledgeable contact persons) towards supply of all-in-one land information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC2. Knowledge of employing relevant inputs required to supply all-in-one land information to meet demands of prospective information users.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC3. Knowledge of employing capital required to supply the information to meet demands of prospective information users.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC4. Knowledge of employing labour required to supply the information to meet the demands of information users.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC5. Knowledge of technical know how required to supply the information to meet demands of information users.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In terms of your knowledge of responding to demands of land information users (<i>i.e. adaptiveness knowledge</i>), please rate the degree to which you agree or disagree with the following statements:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
QC6 A prospective all-in-one land information supplier possesses knowledge of responding to demands of land information users.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC7. Removal of <i>monopoly power</i> of public sector land registration agencies over supply of land information will enable a prospective land information supplier to utilise <i>knowledge of responding to demands of land information users</i> to supply all-in-one land information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION D: Knowledge of satisfying prospective all-in-one land information users

This section focuses on eliciting **candid** rating responses from you on the extent to which as a prospective all-in-one land information supplier you agree or disagree with the statement that you possess knowledge of product and service innovation to satisfy the demands of land information users.

A prospective all-in-one land information supplier possesses knowledge of satisfying demands of land information users in terms of the <u>following</u> :	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
QD1. Knowledge of providing reliable (i.e. trustworthy) all-in-one land information for information users.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QD2. Knowledge relevant to creating public awareness about the information service to attract prospective information users.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QD3. Knowledge relevant to reducing the cost of access to the information by prospective users (i.e. reducing resources, time, and energy that users will spend to access the information).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QD4. Knowledge of supplying tailor made information to match the preferences of prospective all-in-one land information users.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QD5. Knowledge relevant to providing timely information service to satisfy prospective land information users.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In terms of your knowledge of satisfying demands of prospective land information users (<i>i.e. effectiveness knowledge</i>), please rate the degree to which you agree or disagree with the following statements:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
QD6 A prospective all-in-one land information supplier possesses knowledge of satisfying demands of land information users.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QD7. Removal of monopoly power of public sector land registration agencies over supply of land information will enable a prospective land information supplier utilise product and service delivery innovation knowledge to supply all-in-one land information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION E: Knowledge of cost saving technique of supplying all-in-one land information

The goal of this section is to elicit your **candid** rating responses on a chain of activities involved in the supply of land information. Specifically, the section seeks your rating on the extent to which as a prospective land information supplier you *agree or disagree* that the following statements are true about you.

A prospective all-in-one land information supplier possesses knowledge of cost saving technique in terms of the <u>following</u> :	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree Nor Disagree 5	Agree 7	Strongly Agree 9
QE1. Cost saving knowledge of compiling data in relation to land and property.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QE2. Cost saving knowledge relevant to designing an efficient system for processing (i.e. registering) land and property related data compiled towards all-in-one land information supply.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QE3. Cost saving knowledge relevant to keeping land and property records information obtained from registration for easy retrieval.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QE4. Cost saving knowledge relevant to dissemination of all-in-one land information (i.e. providing search reports).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QE5. Cost saving knowledge relevant to updating the information on day-to-day basis towards the maintenance of a reliable, accurate and current land information records.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In terms of your knowledge of cost saving technique to supply all-in-one land information (<i>i.e. efficiency knowledge</i>), please rate the degree to which you agree or disagree with the following statements:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Don't Agree nor Disagree 5	Agree 7	Strongly Agree 9
QE6. A prospective all-in-one land information supplier possesses cost saving technique knowledge for supply of all-in-one land information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QD7. Removal of monopoly power of public sector land registration agencies over supply of land information will enable a prospective land information supplier utilise cost saving technique knowledge to supply all-in-one land information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION F: Perception and impact of policy on supply of all-in-one land information

Please <u>rate the degree to which you agree or disagree</u> with the <u>following statements</u> are true about your perception that the appropriate method of ensuring efficient and effective supply of all-in-one land information in Ghana is a policy of:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
QF1. Government resourcing and orienting public sector land agencies to operate as profit making public enterprises.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QF2. Public Private Partnership (PPP) between government and	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

private sector organisations and entrepreneurs as shareholders to build, operate and transfer (BOT) all-in-one land information.					
QF3. Firms from the private sector providing management services for public sector land registration agencies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QF4. Outsourcing specific information supply services to the private sector.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please indicate if removal of <i>monopoly power</i> of public land registration agencies over supply of land information is likely to enable you as a prospective land information supplier use your:	YES	DON'T KNOW	NO
QF5. <i>Knowledge of demands</i> of land information users to supply all-in-one land information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QF6. <i>Knowledge of responding promptly to demands</i> of land information users to supply all-in-one land information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QF7. <i>Knowledge of satisfying demands</i> of land information users to supply land information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QF8. <i>Knowledge of cost saving technique</i> to supply all-in-one land information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QF8. <i>Knowledge in competing in</i> supply of all-in-one land information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please state your comments on *prospects* and *challenges* of bringing recognised private information suppliers on board with public sector land registration agencies to supply of all-in-one land information.

END OF THE QUESTIONNAIRE- THANK YOU FOR YOUR TIME AND RESPONSE

APPENDIX 4

Questionnaire for Landed Property Owners (LPOs)

SECTION A: Respondent's dataLand and Property Owners: No. **LPO**_____

This section focuses on basic and general data about respondents for the purposes of classification of respondents

QA1. Please tick [✓] to indicate your gender.	<input type="checkbox"/> Male	<input type="checkbox"/> Female	
QA2. Which of the age ranges provided best represents your age group? Please tick[✓]	18-27years <input type="checkbox"/>	28-37years <input type="checkbox"/>	38-47years <input type="checkbox"/>
	48-57years <input type="checkbox"/>	58-67years <input type="checkbox"/>	Above 67years <input type="checkbox"/>
QA3. Which of the following educational levels best describes your highest education obtained? Please tick[✓]			
None <input type="checkbox"/>	Primary <input type="checkbox"/>	Middle/ Junior Secondary <input type="checkbox"/>	Technical/ Senior Secondary <input type="checkbox"/>
Post Senior Secondary <input type="checkbox"/>	Polytechnic <input type="checkbox"/>	University <input type="checkbox"/>	Other. Please specify_____
QA5. Please tick [✓] the option applicable to you.	Land Owner <input type="checkbox"/>	Property Owner <input type="checkbox"/>	Other, specify _____

Section B: Providing information on land and property towards public land information database

This section of the questionnaire seeks to elicit your **candid** rating responses on the extent to which you agree or disagree with statements under questions QB1 to QB5 that: A land or property owner

- (i) has knowledge that individuals require some key information set consisting of information on transactions, legal ownership, land use, environmental condition, and public amenities before making decisions to acquire land or property or rent a property; and
- (ii) is willing to provide this set information towards all-in-one land information database for use by the public.

Use rating scale of; **1**= Strongly Disagree, **3**=Disagree, **5**=Neither Agree nor Disagree, **7**=Agree, and **9**=Strongly Agree.

QB1. A land or property owner;	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
13. Has knowledge that buyers/tenants require <u>market information</u> before making decisions on land and property.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Is willing to provide information about transactions to an organisation that processes and keeps land records.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Is willing to provide information about transactions to a <u>public</u> sector land agency to build land information database	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Is willing to provide information about transactions to a recognised land information service provider from the <u>private</u> sector to build land information database.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QB2. A land or property owner;	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
11. Has knowledge that buyers/tenants require <u>legal ownership</u> information before making decisions on land or property.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Is willing to provide information about ownership status to an organisation that processes and keeps land records.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Is willing to provide information about ownership status of land or property to a <u>public</u> sector land agency.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Is willing to provide information about ownership status of land or property to a recognised land information service provider from the <u>private</u> sector.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QB3. <i>A land or property owner;</i>	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Has knowledge that buyers/tenants require <u>land use and development control information</u> before making decisions to buy/rent land or property.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is willing to provide information on building and development permits of property to an organisation that processes and keeps land records.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Wants to provide information on building and development permits of property to a <u>public</u> sector land agency.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is willing to provide information on building and development permit on land or property to a recognised land information service provider from the <u>private</u> sector.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QB4. <i>A land or property owner;</i>	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Has knowledge that buyers/tenants require <u>environmental information</u> before making decisions on land or property.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is willing to provide information on environmental history of land and property to an organisation that keeps land records.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is willing to provide information about environmental history of land and property (e.g. floodable or marshy land, age of property and decay) to a <u>public</u> sector land agency.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is willing to provide information about environmental history of land or property to a recognised land information service provider from the private sector.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QB5. <i>A land or property owner;</i>	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Has knowledge that buyers/tenants require <u>public utilities and infrastructural information</u> (e.g. water, electricity, land for road expansion and high tension lines) before making decisions to buy/rent land or property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is willing to provide information on public utilities and infrastructure to an organisation that keeps land records.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is willing to provide information on access road and land reserved for other public infrastructure to land or property to a <u>public</u> sector land agency.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is willing to provide information on access road land reserved for public infrastructure to a recognised land information service provider from the <u>private</u> sector.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QB6. <i>A land or property owner is willing to provide;</i>	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
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1. all-in-one land information on land or property to a <u>public</u> sector land agency.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. all-in-one land information on land/property to a recognised land information service provider from the <u>private</u> sector	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION C: Rating on method of efficient and effective gathering and supply of land information

This section seeks your candid opinion on (i) the appropriate method of ensuring efficient and effective supply of all-in-one land information; and (ii) national land registration exercise to build a comprehensive land information database.

Appropriate method of ensuring efficient and effective supply of all-in-one land information is:	Rate the degree to which you agree with the statement				
	Strongly Disagree 1	Disagree 3	Neither Agree nor Disagree 5	Agree 7	Strongly Agree 9
QC1. Government resourcing and empowering public sector land agencies to operate as profit making state organisations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC2. Public Private Partnership (PPP) between government and private sector organisations and entrepreneurs as shareholders to supply all-in-one land information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC3. Firms from the private sector providing land information management services for public sector land agencies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC4. Outsourcing specific land information supply services to the private sector.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC5. Complete ownership of all-in-one land information service delivery by the private sector (i.e. divestiture of public land registration agencies to a private company/group of companies).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QC6. A land or property owner;	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Is willing to take part in <u>free</u> national registration of all lands and buildings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is willing to take part in <u>compulsory but not free</u> national registration of all lands and buildings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is willing to take part in <u>free and compulsory</u> national registration of all lands and buildings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is willing to take part in a national registration of all lands and buildings because it will <u>guarantee</u> (i.e. make certain) ownership of land or building (e.g. minimise fraudulent sales of land /property and encroachments on lands).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is <u>unwilling</u> to take part in <u>free</u> national registration of all lands and buildings for personal reasons.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please state your comments if any on prospects, challenges or doubts about national registration of all lands and buildings towards building a comprehensive land and property information database.

END OF THE QUESTIONNAIRE – THANK YOU FOR YOUR TIME AND RESPONSE

APPENDIX 5A

Results of ratings on land use information by external users

Subcomponent of land use information rated:	Mean	Std. Dev.	Std. Error	Median	Mode	r _{WG}	p <.01
Classification of location	4.2156	0.7208	0.0558	4	4	0.74	0.15
Uses and restrictions	4.3832	0.6469	0.0501	4	4	0.79	
Developments allowed	4.1317	0.9478	0.0733	4	5	0.55	
Existing building permits	4.3353	0.7494	0.0580	4	4	0.72	

APPENDIX 5B

Results of ratings on land use information by internal users

Subcomponent of land use information rated:	Mean	Std. Dev.	Std. Error	Medians	Mode	r _{WG}	p <.01
Classification of location	4.2297	0.7128	0.0829	4	4	0.75	0.23
Uses and restrictions	4.2297	0.7318	0.0851	4	4	0.73	
Developments allowed	3.8919	0.9590	0.1115	4	4	0.54	
Existing building permits	4.2162	0.8955	0.1041	4	5	0.60	

APPENDIX 5C

Results of ratings on land use information by intermediary users

Subcomponent of land use information rated:	Mean	Std. Dev.	Std. Error	Median	Mode	r _{WG}	p <.01
Classification of location	4.0500	0.7592	0.1698	4	4	0.71	0.46
Uses and restrictions	3.900	1.0208	0.2283	4	4	0.48	
Developments allowed	4.000	0.7255	0.1622	4	4	0.74	
Existing building permits	4.300	0.4702	0.1051	4	4	0.89	

APPENDIX 5D

Results of ratings on environmental information by external users

Component of environmental information rated:	Mean	Std. Dev.	Std. Error	Med.	Mode	r _{WG}	p <.01
Protected environmental sites	4.2695	0.8319	0.0644	4	5	0.65	0.15
Environmental history of land	4.1677	0.8262	0.0639	4	4	0.66	
Potential environmental threat	4.3592	0.7622	0.0590	4	4	0.71	
Age of property/defectives	4.0958	0.8158	0.0631	4	4	0.67	
Area prone to earth tremors	4.3533	0.7845	0.0607	4	4	0.69	

APPENDIX 5E**Results of ratings on environmental information by internal users**

Component of environmental information rated:	Mean	Std. Dev.	Std. Error	Med.	Mode	r _{WG}	p <.01
Protected environmental sites	4.1622	0.9512	0.1106	4	5	0.55	0.23
Environmental history of land	3.9595	0.9714	0.1129	4	4	0.53	
Potential environmental threat	4.2432	0.8245	0.0958	4	5	0.66	
Age of property/defectives	3.8108	0.9017	0.1048	4	4	0.59	
Area prone to earth tremors	4.0405	1.0655	0.1239	4	5	0.43	

APPENDIX 5F**Results of ratings on environmental information by intermediary users**

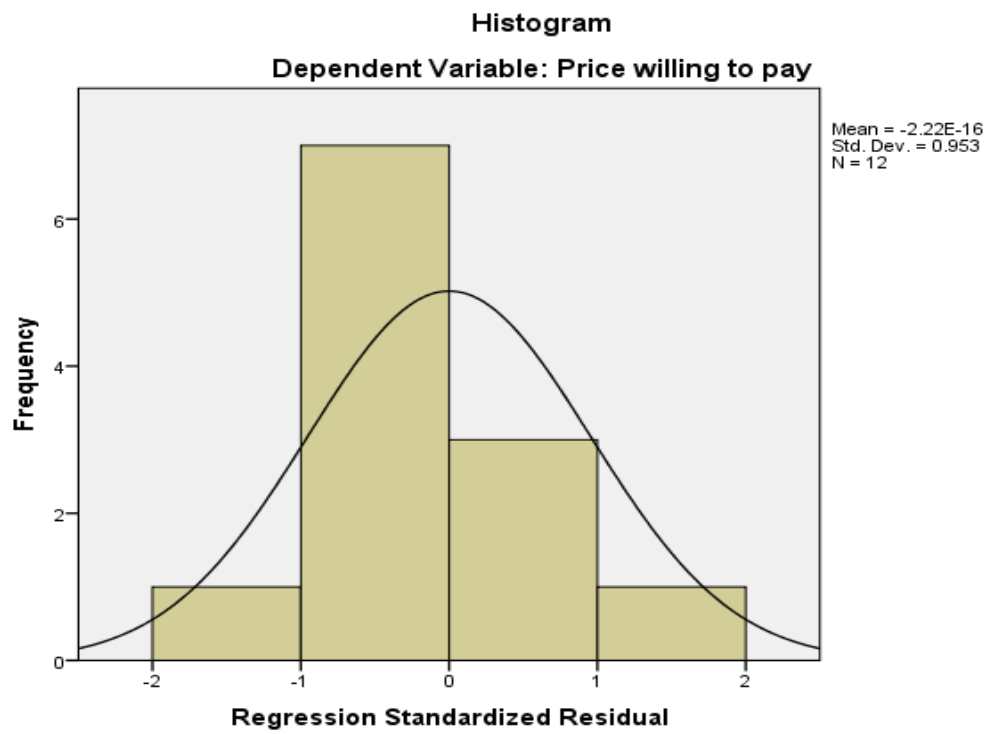
Component of environmental information rated:	Mean	Std. Dev.	Std. Error	Med.	Mode	r _{WG}	p <.01
Protected environmental sites	4.1500	0.6708	0.1500	4	4	0.78	0.46
Environmental history of land	4.100	0.8522	0.1906	4	4	0.64	
Potential environmental threat	4.250	0.6387	0.1428	4	4	0.80	
Age of property/defectives	3.800	0.6959	0.1556	4	4	0.76	
Area prone to earth tremors	4.2500	0.7164	0.1602	4	4	0.74	

APPENDIX 5G**Results of ratings on environmental information by LIUs**

Component of environmental information rated:	Mean	Std. Dev.	Std. Error	Med.	Mode	r _{WG}	p <.01
Protected environmental sites	4.2299	0.8553	0.0529	4	5	0.63	0.12
Environmental history of land	4.1034	0.8731	0.0540	4	4	0.62	
Potential environmental threat	4.3180	0.7711	0.0477	4	5	0.70	
Age of property/defectives	3.9923	0.8412	0.0521	4	4	0.65	
Area prone to earth tremors	4.2567	0.8766	0.0543	4	5	0.62	

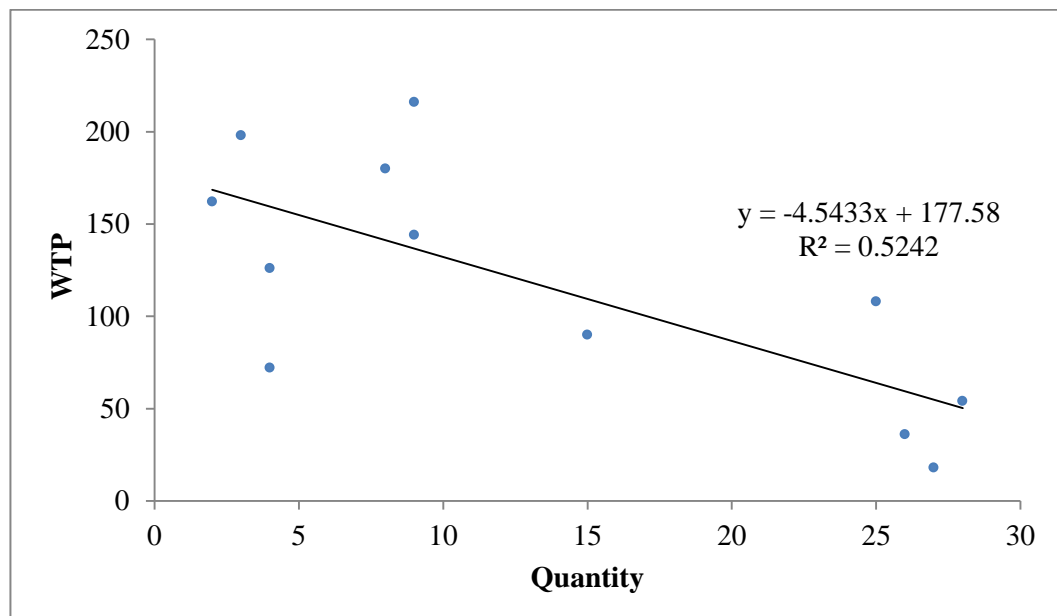
APPENDIX 5H

Histogram of distribution of scores



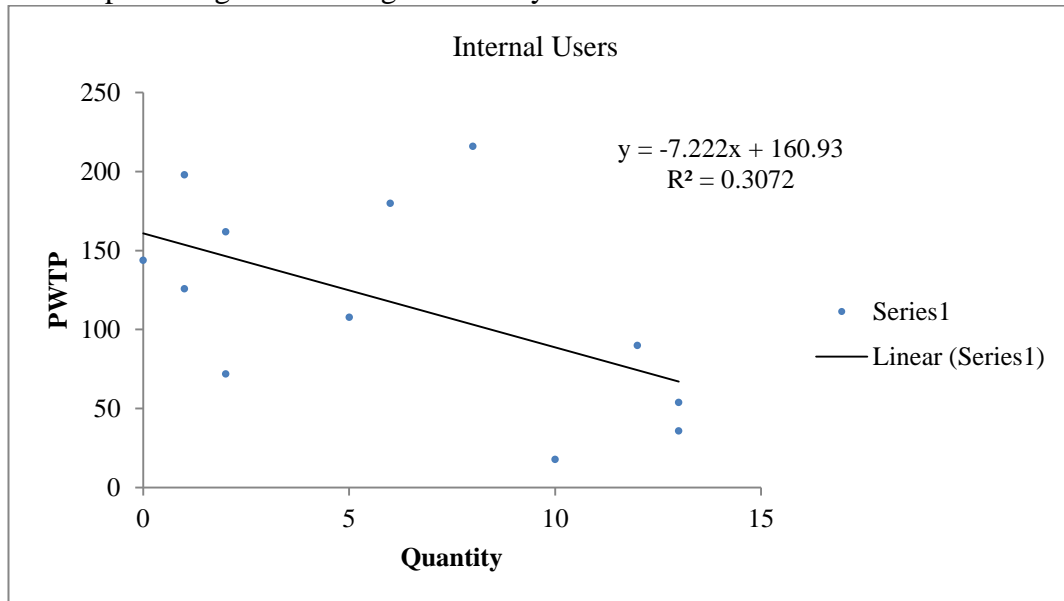
APPENDIX 5I

Scatter plots diagram showing demand by external users

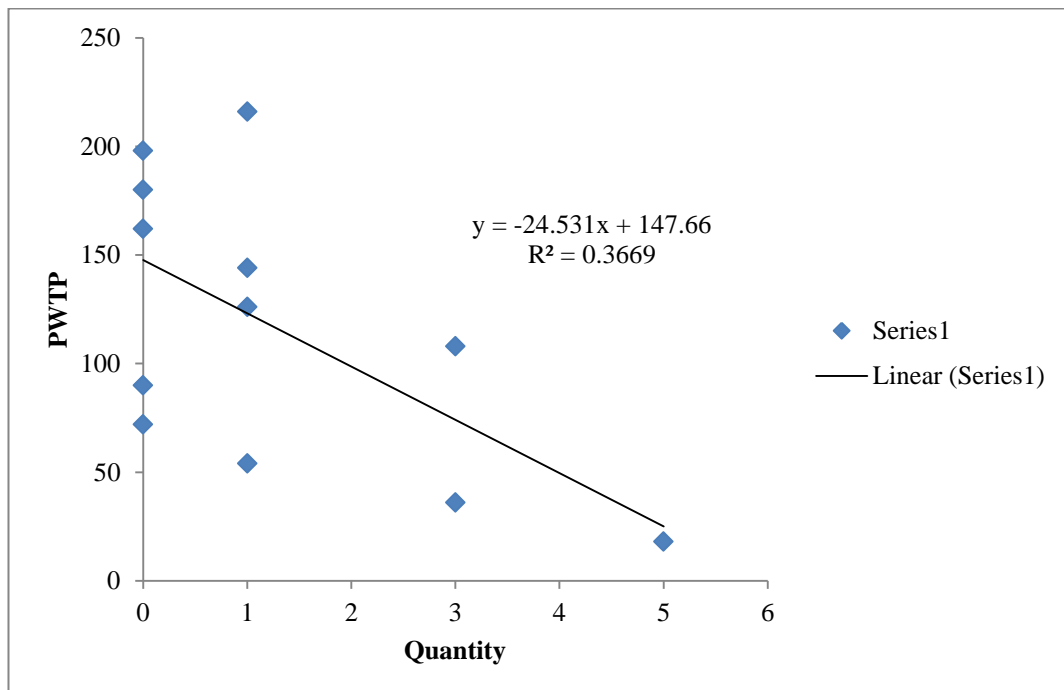


APPENDIX 5J

Scatter plots diagram showing demand by internal users

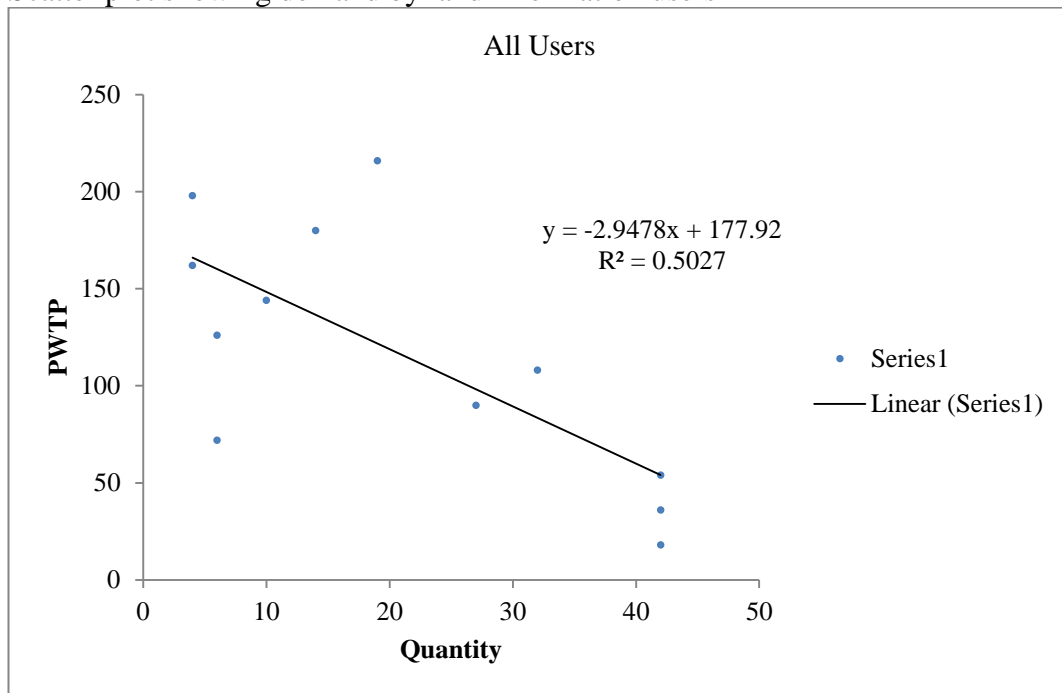
**APPENDIX 5K**

Scatter plots diagram showing demand by intermediary users



APPENDIX 5L

Scatter plot showing demand by land information users



APPENDIX 6A

Dear Sir/Madam,

**VALIDATION OF RESEARCH FINDINGS ON COMPETITION AS A TOOL
FOR HARNESSING LAND INFORMATION IN GHANA**

This is a PhD research that implicates information asymmetry as the major contributory factor to failure of urban real estate markets in Ghana. The claim is made in the context of unhealthy flow and use of unreliable land information under a land information supply regime monopolised by a public sector land administration agency. Hence, the research was designed to verify whether competition among private sector land information suppliers is a sound alternative tool that can be relied on to promote efficient flow and wide access and use of relevant information in the real estate sector. Anticipated outcome from the study is: *A framework for Land Information Harnessing in Urban Real Estate Markets.*

To achieve the above goal, primary data was collected in Accra between November, 2012 and February 2013 from potential land information suppliers sampled. However, in order to integrate other stakeholders' opinion in the framework for land information harnessing, land information users and land/property owners' opinions were also considered. This validation exercise is therefore, aimed at first, soliciting your candid opinion and comments on how valid are the research findings based on your experience or skilled opinion. Secondly, your comments on how feasible the proposed information harnessing framework are solicited. A figure showing the framework is shown in page 2 of the questionnaire attached.

Thank you very much for your timely responses and feedback.

Stanislaus Adiaba (PhD Researcher)

Architecture and Built Environment Department

Faculty of Science and Engineering

University of Wolverhampton, United Kingdom.

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E-mail: stanadiaba@gmail.com

Supervisory Team: Dr Subashini Suresh and Professor David Proverbs

APPENDIX 6B

QUESTIONNAIRE ON RESEARCH FINDINGS AND VALIDATION

The questionnaire contains a figure in page 2 that shows from the bottom to the top key research findings summarised in rectangular shaped boxes highlighted in yellow. These boxes are labelled with corresponding question numbers in the questionnaire where your skilled opinion is required on how valid the findings are. The figure depicts a proposed land information model that integrates the research findings and relevant components highlighted in light green from the base of the model up to the blue highlighted area at the top where your comments on the way forward is equally solicited.

There are eleven (11) research findings that are stated for validation and each requires your response in two parts as follows. First, using five-point multiple choice response option rating scale of *Strongly Disagree*, *Disagree*, *Neither Agree nor Disagree*, *Agree*, and *Strongly Agree*, please click on the appropriate blank response box ☐ to indicate your response as ☒.

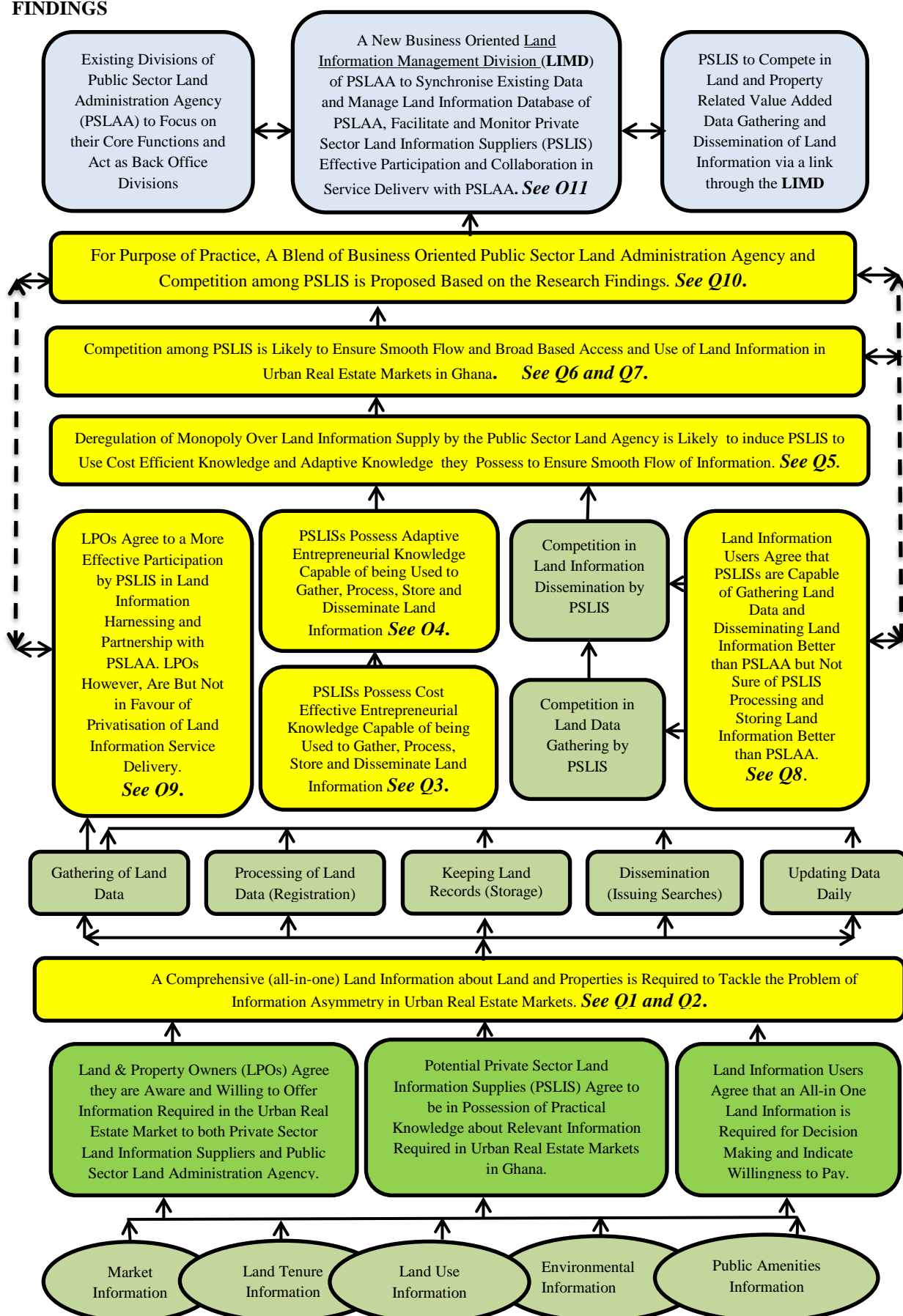
Secondly, your comments are also solicited in the space provided beneath the multiple choice response options provided. The space provided expands as you type in your comments.

Finally, your overall skilled opinion is solicited regarding how feasible is the blend between public sector land agency and private sector land information suppliers with a specialised Land Information Management Division playing a coordinating and monitoring role. The model is proposed for land information gathering, processing, storage and dissemination in the context of Ghana based on the research findings.

Abbreviations used in the model.

LIMD	Land Information Management Division
LPOs	Land and Property Owners
PSLISs	Private Sector Land Information Suppliers
PSLAA	Public Sector Land Administration Agency

A LAND INFORMATION HARNESSING MODEL PROPOSED BASED ON RESEARCH FINDINGS



Kind of Information Required to Deal with Information Asymmetry

1. The research found that five (5) key components of land-related information consisting of market event, ownership, land use, environmental, and public amenities information are required to deal with information asymmetry in urban real estate markets in Ghana.

Strongly Disagree ☐ Disagree ☐ Neither Agree Nor Disagree ☐ Agree ☐ Strongly Agree ☐

Please type in your comments on the above research findings:

2. The research also found that title registration system introduced in Accra is not an efficient land information gathering tool compared to the deeds registration system hitherto being used.

Strongly Disagree ☐ Disagree ☐ Neither Agree Nor Disagree ☐ Agree ☐ Strongly Agree ☐

Please type in your comments:

Private Sector Involvement in Land Information Service Delivery

3. The research found that potential private sector land information suppliers (PSLIS) possess cost efficient entrepreneurial knowledge most likely relevant to land data gathering, processing of land data, land records keeping, and dissemination of up-to-date land information.

Strongly Disagree ☐ Disagree ☐ Neither Agree Nor Disagree ☐ Agree ☐ Strongly Agree ☐

Please type in your comments:

4. The study also found that potential private sector land information suppliers possess adaptive entrepreneurial knowledge most likely relevant to responding to changes in demands that occur in urban real estate markets.

Strongly Disagree ☐ Disagree ☐ Neither Agree Nor Disagree ☐ Agree ☐ Strongly Agree ☐

Please type in your comments:

5. The study further found that private sector land information suppliers are likely to use cost efficient and adaptive knowledge they possess in competition for land information service delivery in the event of deregulation of land information supply in Ghana.

Strongly Disagree ☐ Disagree ☐ Neither Agree Nor Disagree ☐ Agree ☐ Strongly Agree ☐

Please type in your comments:

6. The study found that competition among PSLIS is likely to result in improved awareness creation, less costly and timely access to information, innovation in service delivery, and prompt response to preferences in demands of land information users.

Strongly Disagree ☐ Disagree ☐ Neither Agree Nor Disagree ☐ Agree ☐ Strongly Agree ☐

Please type in your comments:

7. The research further found that there is an inverse relationship between demand and price for land information and this suggests that supply of land information at a reduced cost is likely to result in increased access and use of land information by the public.

Strongly Disagree ☐ Disagree ☐ Neither Agree Nor Disagree ☐ Agree ☐ Strongly Agree ☐

Please type in your comments:

Stakeholders Opinion about private sector participation

8. The research found that land information users perceived private sector land information suppliers are capable of gathering land data and disseminating land information but not sure of their capability to process and keep land records better than public sector land agencies.

Strongly Disagree ☐ Disagree ☐ Neither Agree Nor Disagree ☐ Agree ☐ Strongly Agree ☐

Please type in your comments:

9. The research also found that land and property owners agree to a more effective participation by PSLIS in land information harnessing and collaboration with public sector land agencies but disagree with privatisation of land information service delivery.

Strongly Disagree ☐ Disagree ☐ Neither Agree Nor Disagree ☐ Agree ☐ Strongly Agree ☐

Please type in your comments:

10. The study found that restructuring of hitherto four public sector land administration agencies into a single land agency has generally brought inertia in land surveying, title registration, and land information searches service delivery compared to service delivery prior to the merger. Stamp duty data gathered was found not packaged and commercialised.

Strongly Disagree ☐ Disagree ☐ Neither Agree Nor Disagree ☐ Agree ☐ Strongly Agree ☐

Please type in your comments:

Comments on the proposed land information harnessing model

11. Based on the research findings, a land information harnessing model is proposed and this is highlighted in blue in the figure attached to the questionnaire in page 2. Please state your opinion and comments on whether the model proposed is feasible in the context of Ghana. If not feasible, please provide your comments on an alternative feasible approach.

Please type in your comments:

END OF THE VALIDATION QUESTIONNAIRE-THANK YOU FOR YOUR TIME AND FEEDBACK